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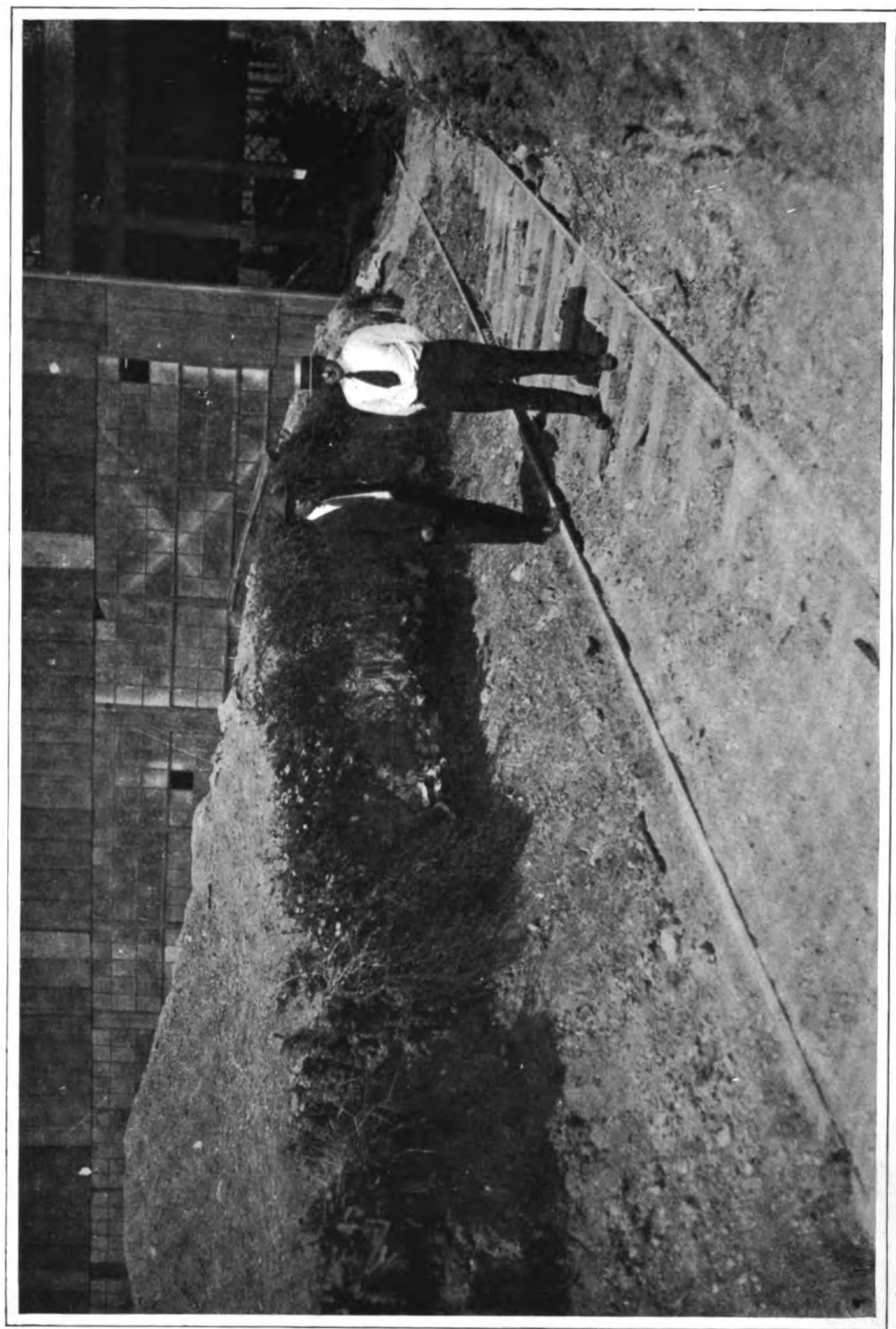
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AN OLD ROMAN ROAD INTERSECTED IN CONSTRUCTING THE AMERICAN ORDNANCE BASE AT MEHUN-SUR-YEVRE, FRANCE

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EDITORIAL COMMENT

What Next?

This question arose in every thoughtful mind on the formal announcement that Germany would sign the peace treaty. The man does not live who could answer it. What are going to be the immediate and what the remote effects of peace? It is taken for granted that the world has undergone a great and permanent change. Community life, taxation, industry are all going to be different, but just how different no one can predict. Transportation has been disorganized and it is impossible to tell when it will regain anything like its former efficiency. The cost of living has become exceedingly burdensome, and it is not easy to see how we can make it less so in the near future. Credit is greatly extended as a result of the war activities, and presents some complicating features which it is desirable to remove as quickly as possible. Gold is the basis of credit, and now it costs a good deal more than a dollar to produce a dollar of gold, a fact which has caused some of the gold mining companies to threaten a suspension of operations. Labor for domestic purposes has become very scarce, and the price of it has risen very materially, resulting in innovations in domestic life which are proving very embarrassing. Many trade relations have been disrupted, and new ones must be established if industry is to remain satisfactory. We could go on endlessly enumerating the perplexities that are already confronting us. Time will, of course, solve all these problems, but we have as yet no inkling of what the solution will be.

But it is of the larger and more remote consequences of peace that we desire to speak at this time. The settlement of

the boundry lines of Europe is a matter of absorbing interest. By the treaty Germany has lost a great amount of her territory and many millions of her population, and wedges have been thrust into the territory left to her which may conceivably be productive of trouble in the future. The Czecho-Slavs, the Jugo-Slavs, the Hungarians, the Austrians, the Poles, the Lithuanians, the Ukranians, the Finns, the Esthomians, to go no farther, are all intent on settling their boundary lines, and in a discordant spirit. The Italians are heated over Fiume and the Chinese over Shantung. Dissatisfaction is rampant among all these peoples, and it may be assumed that each of them will strive persistently to effect the ends which it has at heart.

In addition there are a host of questions which time only can settle with reference to the Turkish Empire. Whatever may be the decree of the present regarding Constantinople, it will be impossible to accept it as final in marking the fate of that historic city. And it may not be easy to shape the destiny of Armenia. This is true also of the rest of Asia Minor.

No one can tell what the political and economic consequences will be of the attempt to weld in closer union Great Britain and her colonies. Nor what steps the exigencies of France may compel that nation to take in connection with the Rhine country.

As interesting as anything is the political and economic future of Germany. The outlook there is baffling. One does not know where to begin in discussing the situation in the Fatherland. Politically and economically it seems well nigh at the point of disintegration. Where is Germany going to get the money to pay the indemnity? Her finance minister has recently outlined a program that is calculated to daunt the staunchest heart. Is Germany going to be tax-ridden beyond the point of endurance? If so, what will be the political consequences? Will she become a race of mere helots, or will she arise infuriated by despair and try to precipitate havoc among the nations? What kind of leadership is she going to have; futile or masterful?

There are those in every nation who fear insidious activity on her part. Learned treatises have been written to arouse apprehension of an alliance of Teutons and Slavs, or perhaps more correctly an incorporation of the Slavs by the Teutons. This is an old and intermittent apprehension, which the abnormal situation of today has caused to flare up with new

intensity. The subject is exceedingly interesting and could be discussed at great length.

Briefly, for a good many years before the war there was, off and on, a feeling that the Germans were, and for long had been, trying to interpenetrate Russia by political and industrial methods. About fifteen years ago a learned professor of history in this country printed an article in one of our leading publications, in which he took the opposite view, namely, that Germany was conscious that she was in danger of becoming the prey of the Russians. There was, he said, a great Slav peril, and he urged an alliance between Germany, Great Britain and the United States to avert this, claiming that Germany could not take the initiative in the matter owing to her proximity to Russia. We recall this fact because it indicates that for a good many years there has been a feeling that some day Slav and Teuton would inevitably clash. It is possible that the Germans had a real fear that the Slavs were out to "do them up" and decided to act first, but it is equally possible that Germany, conscious of her strength, was the real plotter.

The question of geography is of great interest in this connection. In the past the vast stretches of Russia and Siberia have had no adequate outlet on the sea. The rivers flowing to the north were icebound in winter and in summer debouched into remote northern seas. For this reason this great continental tract was backward in development, lacking transportation and most of the other facilities possessed by the great sea powers. It is suspected by some that during the last century Germany had been consciously supplying the means of overcoming these difficulties. German capital and German industrialists flowed freely into Russia, and the economic affairs of that country fell largely into German hands. The work of interpenetration was, apparently, going on with considerable rapidity. It is now assumed by some that Germany, having been defeated in the West, will, in her effort to reconstitute herself, turn her attention more assiduously than ever to the East.

It is hard to see how, in view of her political and economical disorganization, she can achieve tangible results in this direction. Still, the fear exists in many minds that she will sooner or later dominate the Slavs, and then cry havoc and let loose the dogs of war. The contingency is one that cannot be ignored, and it imparts an important element to the problem we are now discussing.

The most that can be said about the peace settlement is that it imposes on everyone the world over the necessity of thinking more seriously than in the past, of working harder, of saving more scrupulously, and of adjusting himself as gracefully as possible to new and unexpected situations. This is the worst time in the whole history of the world to insist too strenuously on individual self-interest.

The Scientific Spirit and Social Betterment

Almost everything has been regulated in these days except the mind of man. The state now forces public utility companies, for example, to fix the prices which they charge their customers in accordance with the principle of a "fair return on a fair value." To ascertain a fair value requires painstaking effort. The search is for exact facts, and when the rates are fixed the fixers assume that they have got the real facts. Facts indeed are about all there is to life. We are all agreed that theories that are not based on facts are calculated to do more harm than good.

We have just been reading an address by the president of the Ohio Academy of Science, entitled "The Scientific Spirit." The curious thing about it is that the scientific spirit is far more apparent in the title than in the address. It opens with these words: "The scientific spirit, while not easy to define, is a reality, differing from the artist spirit in some important elements." This is a correct distinction; for art is a product of the emotions, while science has no use for anything but facts. Yet even art is meretricious and of no interest to us if we suspect that it distorts reality. The human mind has no love for things that are contrary to nature.

With this satisfactory introduction, the address goes on to make certain statements which are surprising as coming from a scientist. We are told that one of the most absurd of social economic conventions is the adoption of a single metal as a medium of exchange, owing to its constant fluctuation in value, and an allusion is made to Professor Irving Fisher's advocacy of the balanced dollar, which seems to meet with the approval of the speaker. We have no intention of discussing Professor Fisher's project beyond saying that it has not yet met with the approval of economic students possibly as able as himself, and undoubtedly as eager to reduce the currency to a stable basis. The point is that the balanced dollar has not yet been sub-

jected to sufficient scientific discussion to enable the scientific world to dogmatize regarding it. The one incontestable fact is that the world has for some thousands of years been experimenting with a great many kinds of currency and has so far created none that so well answers its purpose as gold monometalism. We allude to this particular subject merely to show how easy it is for a mind calling itself scientific to depart from facts and to perform that act most abhorrent to scientists, namely, to generalize from insufficient data.

Here is another evidence of the same nature: "Another, more serious economic error is the permitting of private ownership of land and of natural resources." This indicates fatal ignorance of the origin of private ownership of land. To ascertain the facts we must appeal to history. It may surprise some persons to learn that in this country at least private ownership of land dates back to feudal tenures. In old England, from whom we have inherited our basic institutions, the land, in theory, all belonged to the king, who parceled it out among his feudal subjects in return for service. They had to support him in war and in other affairs of state with men and money and supplies, without which he could not maintain his position as head of the state, and defend the state against aggressions from abroad and disturbance from within. In process of time, with the refinement of civilization, this service was transmuted into taxes. In this country there is no king, yet everyone has to pay the state for the land he owns. He pays in the form of taxes, and if he cannot pay the state sells him out and the land goes to someone else. In the final analysis everyone helps to pay the taxes, either in the form of rent or in the cost to the final consumer of the goods produced. Land, indeed, is one of the most expensive things a man can own, for taxes will eat him up if he does not employ it properly. If he does employ it so, everybody will share in the benefit — the state will get a certain sum to help it pay its expenses, and the goods produced will help lower the cost of living. If there is land on which the taxes seem very low, it is because it cannot be employed profitably enough to make it worth anyone's while to pay high taxes on it. One may own a tract in a desert, but if no one cares to live on it and it is impossible to raise crops on it, or pursue any other industry on it, it is hopeless to try to make it return very much to the state.

A little knowledge of history and a moment of thought are

all that is necessary to prove all this. Yet the fact that so few people own land and so many do not has caused a good many persons to get excited. If there are a large number who do not own land, it is due to the fact that they don't want to own it; and in that case, it would be very foolish not to let those who do have it, because as a rule it will cost them more than it is worth to have it and not use it. That may be laid down as a rule, though, of course, every rule has its exceptions.

We are told, again, that a huge economic blunder is seen in the adoption of fire insurance as a substitute for fire prevention. It is true that the speaker says: "I have no quarrel with fire insurance as such, but we are strangely blind when we let the partial protection of the individual, through fire insurance, cause us to feel such security that we continue to allow the commonwealth to suffer its huge fire loss." This throws a ray of light not only on the question of fire loss, but on all the questions which are discussed in this address. There would be no trouble in this world if everyone was living carefully and conscientiously. It is because most persons are not so living that we have to employ the methods which are so roundly denounced by the present speaker, and by thousands and millions of other persons. If people will not be careful and conscientious we have to do the best we can in the circumstances. It would be very much better if there was no need of fire insurance. The speaker says a government bureau, with many millions at its disposal, should be studying the problem of fire prevention. He also says: "But scientific study is one of the most difficult things to secure." It is, indeed, and even more difficult is making people comply with the results of such study. Everyone knows that it is not a good thing to smoke a cigar in a room filled with inflammable material, but a great many people smoke, nevertheless, and that is one reason why fire insurance is necessary. The methods employed in our community and industrial life are those which human nature seems to necessitate. Let us change human nature if we can, but if we can't, let us make the best of the facts as we find them.

We also read that in our country we have a conspicuous instance of economic absurdity in our system of taxation. There is no doubt about that, but there is no use harping on the fact unless some specific means of improvement can be pointed out. We read: "In ancient days it was customary in many countries to 'farm out' the taxes to private collectors,

making them pay a given sum into the treasury and permitting them to keep for themselves whatever amount beyond this they could succeed in raising. But to America alone, among modern occidental nations, belongs the distinction of continuing this ancient system to the present day. Our national government exposes the American citizen, without protection, to the brigandage of forty-eight separate states, each seeking to fill its own coffers from his pocket, and oblivious of the extent to which other states may have already plundered him." The analogy here to the old "tax farmer" is extremely defective. The forty-eight states are not collecting taxes as "farmers" for the national government, but each in its own interest to secure funds for its own support. They do not turn over any of the money to the federal government, because under the Constitution of the United States no state, as a state, pays anything to the federal government, unlike the situation in the German Empire, for example.

Now while everyone could wish that a better system of taxation might be devised, we can have no desire for such if it is likely to work mischief in other directions. The powers of the federal government are delegated powers, and while the states have delegated the power to the federal government to collect taxes for itself, they have also reserved the right to collect taxes for themselves. The question, therefore, is how far do we care to go in surrendering the sovereign rights of the states? While there are some who think we could advisedly go a good deal farther than we have gone, there are some who think that we have already gone farther than is safe. The question is a debatable one and one that calls for calm rather than excited discussion.

Then there is this point: "A false and unsocial principle hereto accepted is that the possession of wealth excuses a man in some degree from social service." This is altogether vague. What is social service? How does one go about to perform it? Does social service mean that everyone who has a right to vote should be made to exercise it? But among those who have little wealth there are relatively as many who do not care to vote as among those who have great wealth. Just what does social service mean? Does it mean that a person of wealth should gratuitously distribute his property among those who have it not? If so, that would be the most degrading slur that could be cast upon the 110,000,000 persons who consti-

tute the American community. Does it mean that a person of wealth should attend community sociables and take part in the playing of games and the singing of ragtime? But among the poor as well as among the rich there are many who have no love or aptitude for that sort of thing. Does it mean that a business man of wealth should run his business at a loss in order that his employees might have higher wages? But the objection to this is that after a short time he would be out of business and his employees would be seeking new jobs. Or does it mean that a person of wealth should be on civil speaking terms with his poorer neighbors? But most of them are.

The speaker whom we are quoting says: "I fully believe that the organization of society is to be decidedly changed, that in our legal systems manhood rights and interests are to receive more emphasis in comparison with the rights and interests of property and that the selfish use of power by state or individual will be frowned upon and effectively restrained." This seems a very queer statement, in view of the fact that manhood rights at present are possessed by every person in trousers over twenty-one years of age, and are likely soon to be possessed by everyone in petticoats, and that the state today is exactly what those who possess manhood rights and have manhood interests have consented to make it. But perhaps the speaker is referring now to other countries rather than our own. Yet he does say that the American labor unions and organized capital must change their intensely selfish pre-war spirit if they are to co-operate successfully in the work of reconstruction, so apparently he is talking of this country. To change the selfish spirit of anyone is an excellent accomplishment. But how is it going to be done? It is doubtful if legislation or collective bargaining or any other political or economic expedient ever made anyone righteous and just. There are only two ways of accomplishing this end. One is religion, and the other is self interest. The particular kind of religion we have has been in the world for nearly two thousand years, and yet we are where we are. If we could have more of it, and have it more intensified, it might produce the result, but it cannot honestly be said that religion shows any sign of taking a stronger hold on us in the future. So that after all perhaps we shall have to fall back on self interest.

In many minds self interest is a very degrading term. And yet after all it is after religion the finest thing in the

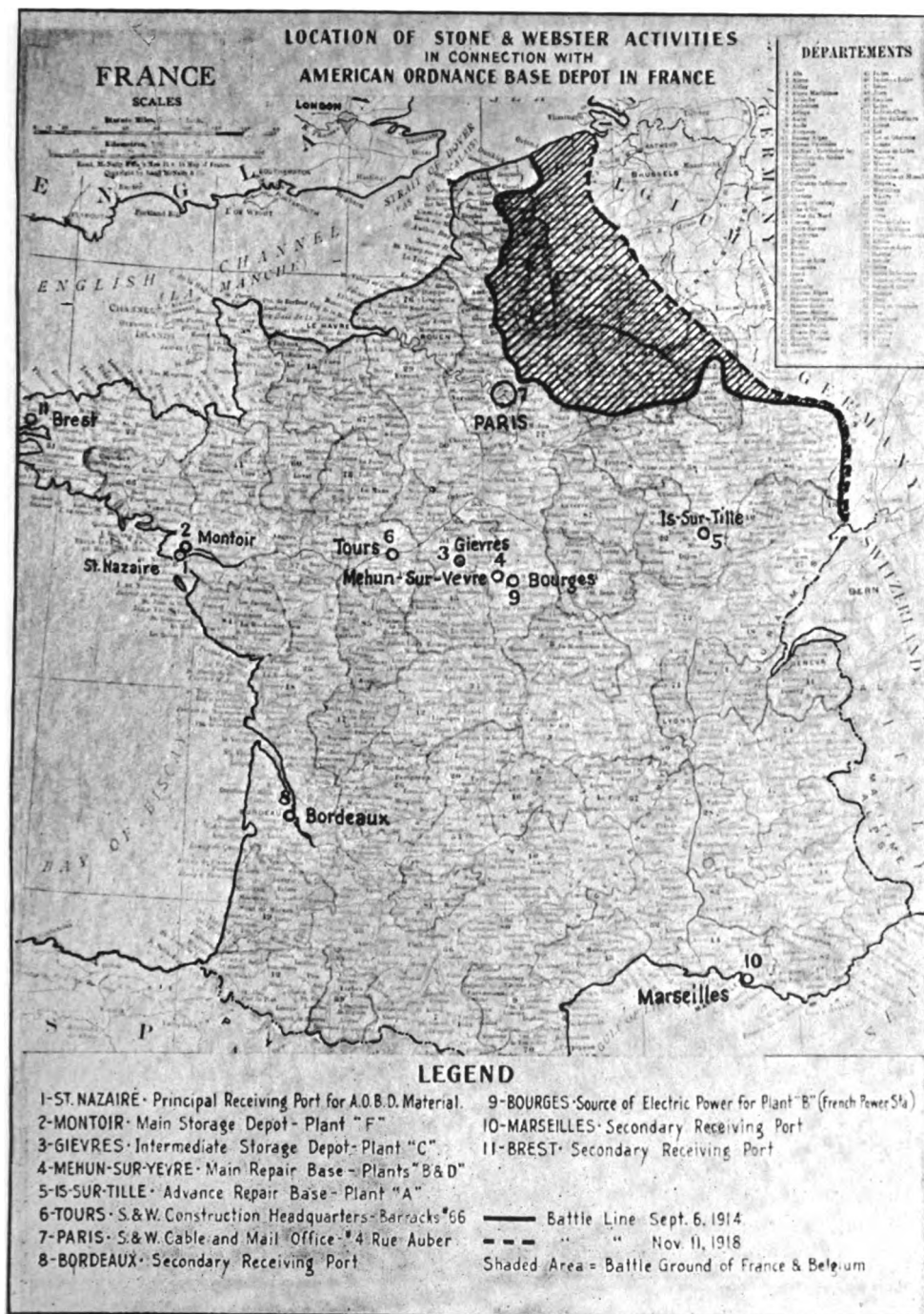
world. We mean, of course, genuine self interest. Self interest has taught us that honesty is the best policy, and most of us are honest, not in order to keep out of jail, but because we know that in the long run, we, personally, and the world at large will get along better by being honest than by being dishonest. Our intelligence teaches us this. Self interest teaches an employer to treat his employees in a way that will prompt them to do their best work. Self interest teaches employees not to ask more of employers than the business can stand. There are indeed a great many persons, both among employers and among employees, who are governed by a low expediency and are ever ready to sacrifice permanent self interest for temporary self interest. But how are they going to be changed? We have failed to see anything in the address we are discussing that indicates how.

To be sure we are told that: "Class prejudice, class rivalries, class hatreds, any organized or individual self-seeking at the expense of others must be fought wherever found and the open, unselfish mind promoted. In leading and in upholding the hands of the leaders the men of true scientific spirit will effectively serve. They will be the leaven, helping the people to understand and accept the new order." But the true function of the scientist is to investigate and teach. If our economic and social ills are to be remedied by the scientists they must work in a scientific spirit. They must start with no preconceptions, no predispositions, must ascertain basic facts and state nothing as a fact until it is known to be such beyond peradventure. Like wise physicians they should refuse to prescribe without a complete diagnosis. They should know exactly what is the matter with us, what has caused it and what is the safe remedy. In our economic and social life most of us would prefer to remain in a lingering illness rather than die from a wrong kind of medicine.

THE ORDNANCE BASE OF THE AMERICAN EXPEDITIONARY FORCES

"Here, far in the rear, away from the noise, confusion and danger of the front, we dig, place concrete, erect the steel and put on the sides and roofs of buildings that are to have an important place in the future operations of our American armies. It is a thought-inspiring sight to see an American factory springing up as by magic out of the golden grain fields of sunny France, and after mess I like to wander down the old Roman road that Caesar's engineers laid out even before the Wise Men followed the Star, to a little pine-top hill overlooking this bit of our own country that we have brought over here to back up our lines of fighting men. From my seat on a pile of pine logs I can look way over the quiet fields at the evening sunbeams dancing on the myriad window panes of this group of giant buildings." So wrote John E. Kemp not long before the armistice, in the magazine of the Walworth Manufacturing Company, with which he was identified before entering the Stone & Webster organization.

Now that the war is over and peace has been legally constituted, it is possible to give a more intimate description of the great Ordnance Base created in France by the American Government. Before going into detail, however, it should be stated that the labor for this enterprise was drafted from the American Expeditionary Forces. The difficulties arising in this connection were graphically described by Mr. Kemp in the following terms: "The job that takes all the patience one has is the training, coaching and directing an ever-changing personnel. A battalion of 750 men arrive today, rest up tomorrow, and the next day are thrown on to the job. Tasks are assigned, tools distributed, work explained and sometimes even exemplified, and then as fast as possible, day by day, mistakes are corrected, better methods developed, leaders developed also and the rank and file taught what is good work and true. It takes more time to make a good foreman out of the non-coms than to train the majority of the men, and when it comes to officers it requires as long to initiate a bank clerk or silk hosiery salesman into the building game as it does a minister. (In the last batch I had these three.) Now all that is in the day's work and we have grown to expect it, but after a week's training you



find that men you have grown to depend on begin to disappear. Bill Jones, the foreman of your machine shop, has been sent with forty of the best men to another depot, and Jim Brown, your crack roofer, has been detailed to the kitchen police. At the end of four weeks your detail musters but half the strength, so in comes another and it all begins again."

Mehun was selected as the site for the great Ordnance Base, and of Mehun Frederick L. Collins says in the July, 1919, McClures, "Mehun like Gievres is a hole in the ground that was never registered even as a depression on the topographical map of Europe until the S. O. S. of the A. E. F. put it on the military and industrial map of European America. In the first days — those awful days when a handful of ordnance veterans and industrial experts found themselves building warehouses and repairing roads and wallowing in Gallic mud — Mehun was known as a Hell-hole of disease and death." And he says further, "The first ordnance troops to arrive found a sea of mud on which floated the makings of several monster warehouses. These men — the pick of the supply service who had enlisted to give their country the particular abilities for which they had won recognition in their various trades — went to work with picks and shovels and sledge hammers to build an American city on a French dump. And they succeeded. They couldn't help succeeding. They were go-getters, American go-getters, the most virulent type of that primitive breed. They built the warehouses — great structures like the Union Station in St. Louis or the South Terminal in Boston — and they built railroad tracks to their doors and roads on which motor trucks could pass through the rainiest of France's almost daily rainstorms. They recreated Pittsburgh in a sea of mud; they brought forth Kansas City in a long dark night of labor; they transplanted Camden, New Jersey, to Mehun, France. The frog pond disappeared. The industrial community arose with its neat houses for officers and men; its daily newspaper; its evening entertainments; its baseball teams in which the Camp Commander plays second base."

It was early in August, 1917, that Stone & Webster were invited to a conference with Colonel D. M. King of the Ordnance Department to discuss the possibility of their undertaking the layout and detail design of the proposed Ordnance Base, the purchase of machine tool equipment, material and other supplies and the supervision of the erection of the building,

installation of machine tools and construction of some auxiliary features. The negotiations proceeded rapidly and on August 27, 1917, the arrangement was formerly effected. Stone & Webster opened an office in Washington on September 1st, with Mr. J. R. Lotz designing and purchasing. Their force was rapidly assembled and on December 29, 1917, comprised 300 persons, including 6 executives, 24 engineers and 100 draftsmen.

Early in September, J. H. Hood of the Stone & Webster organization sailed for France. To conform to the custom in France he was given the title, Director General of Construction. He was followed by a force of superintendents, engineers and foremen.

The plant was laid out to serve an army of 2,000,000 men in France, to be mobilized there at the rate of 80,000 men per month beginning August 1, 1917. Following is an estimate of the requirements of an army of this size. The gun repair plant should be of sufficient capacity to reline, per month: —

511	-	75-millimeter field guns
140	-	3-inch anti-aircraft guns
180	-	155-millimeter guns
104	-	9.5-inch Howitzers
65	-	4.7-inch guns

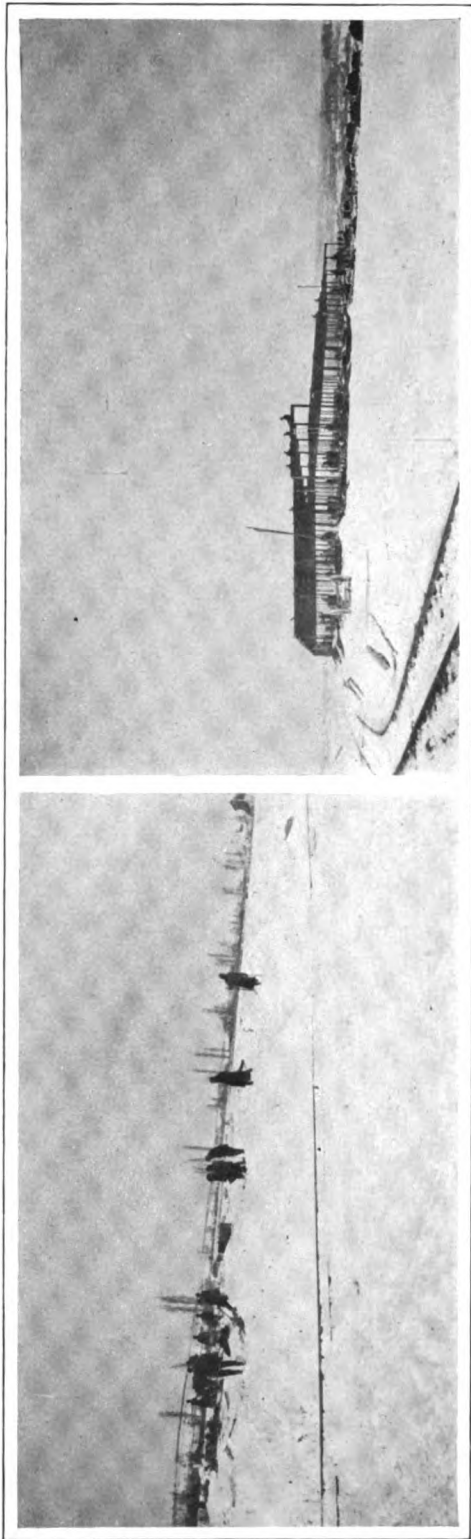
The reloading plant should overhaul and reload 114,000 cartridge cases daily, the various sizes being as follows:

80,000	-	75-millimeter
17,000	-	37-millimeter
12,000	-	3-inch
5,000	-	4.7-inch

The other plants should have monthly capacities as follows:

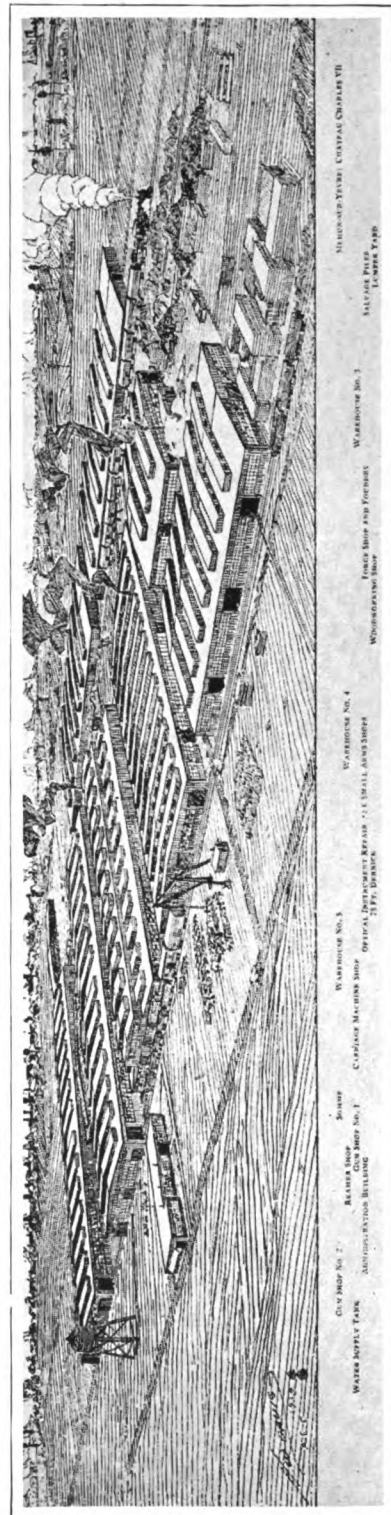
Gun Carriage Repair Plant	-	12,000 broken carriages
Tractor Repair Shop	-	700 damaged vehicles
Equipment Shop	-	150,000 sets infantry equipment
Equipment Shop	-	6,000 sets horse
Small Arms Shops	-	50,000 rifles
Small Arms Shops	-	7,000 machine guns
Small Arms Shops	-	2,000 pistols

There was first contemplated one main repair group comprising 28 storehouses 240' wide by 500' long, 10 large shops and numerous small buildings (over 100 acres of floor space) where all ordnance repair and reloading operations could be handled. In order to distribute the storage facilities to better advantage this plan was abandoned and the plant was separated into seven groups located at different points along the lines of communication from our ports of debarkation toward

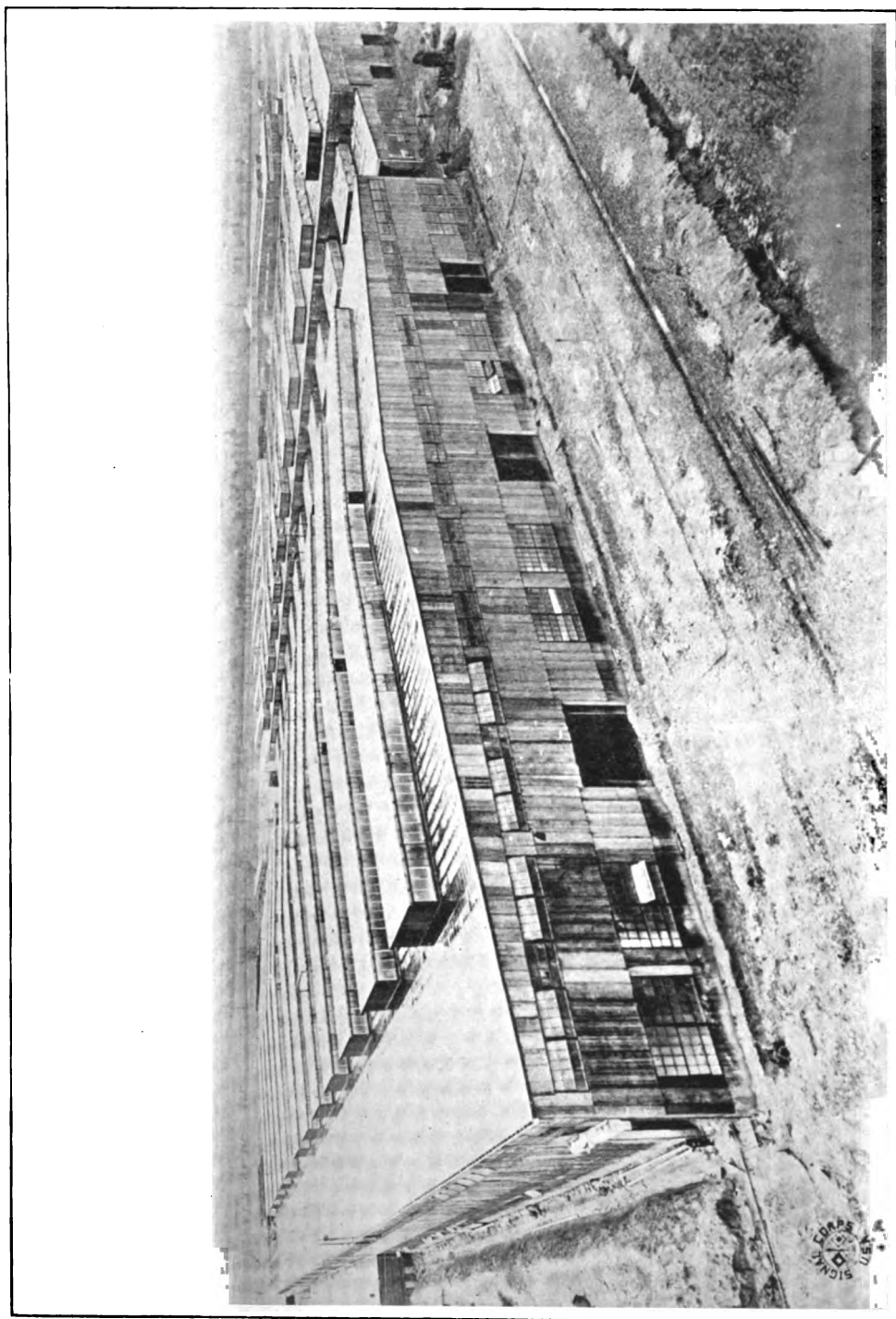


STARTING CONSTRUCTION WORK AT IS-SUR-TILLE, DECEMBER, 1917

ERECTING STOREHOUSE, 500 x 240 FEET, AT IS-SUR-TILLE



SKETCH OF AMERICAN ORDNANCE BASE AT MEHUN-SUR-YEVRE, FRANCE



ORDNANCE REPAIR SHOPS, AMERICAN ORDNANCE BASE, MEHUN-SUR-YEVRE — ROMAN ROAD IS SEEN AT THE LEFT

the front. The accompanying map of France shows in a general way the locations of the plants described.

It was highly important that contracts for building material should be placed as early as possible. Drawings for structural steel were completed on September 18th and on the same day orders were placed with various steel mills for the framework for 28 storehouses and four light shops, involving 13,000 tons of material. The manufacturers promised to begin shipment on October 20th at the rate of 1,500 tons per week, completing the order December 15th.

The steel for the first storehouse was shipped October 6th and arrived in France November 18th, sixty days after the date of the order and less than ninety days after the contract with Stone & Webster was signed. This steel was delivered at Is-sur-Tille December 1st, and erection was started the following week.

After September 18th, additional orders were placed for 11,000 tons of steel to complete six additional shops and six more storehouses, making 24,000 tons of structural steel. On December 18th, ninety days after the first order was placed, 15,000 tons had been delivered at seaboard. It was realized very early in the development of these buildings that plans were subject to change after material was on the ground, and that complete buildings or parts of buildings were likely to be lost during transit as a result of torpedo attacks, accidents or otherwise, and for these reasons the plan of development in standard interchangeable units was recommended by Stone & Webster and adopted. This plan was exceedingly well carried out. The design of all storehouses and light shops required no fabricated members, and all assembling was by bolts instead of rivets. The buildings were divided uniformly into 20-foot square bays. All rafters, purlins, girts and braces were interchangeable and by adopting a scheme of variable heights for column footings, all columns are of the same length and section. This plan has permitted reductions or additions to the storehouses and light shops and the breaking up of large buildings into smaller ones without expensive alterations at the mill or long delay in the field. Its adaptability was effectively shown in the design of the reloading plant. The preliminary plans for this plant showed a few large buildings, but later developments showed the necessity of breaking this up into a number of small ones. Six of the typical storehouses were allotted to

this plant and from these six buildings were evolved 109 buildings of various size from 20' square to 240' x 520'. This change required the purchase of a few hundred tons of additional steel, but it did not necessitate the slightest change in the steel for the storehouses with which the development started.

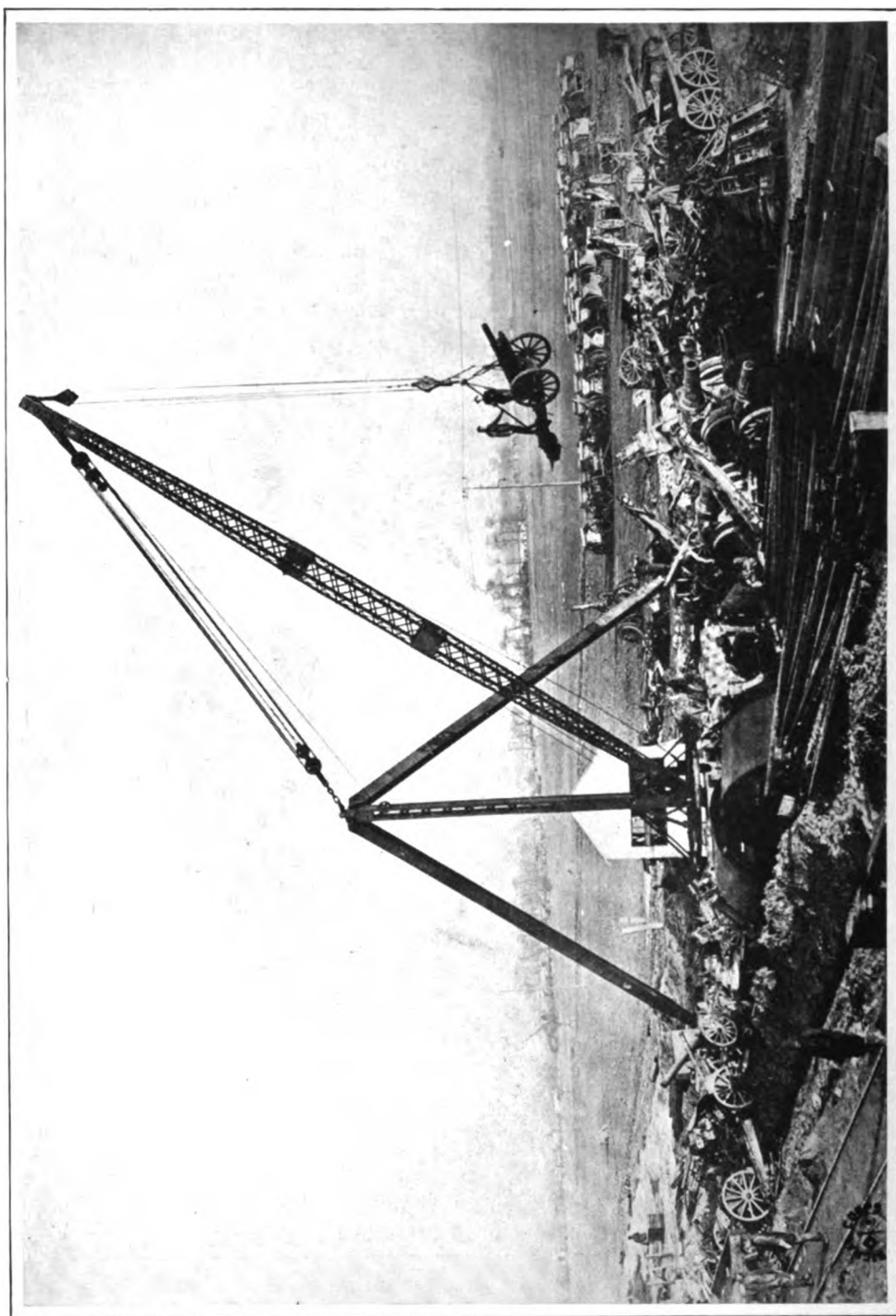
The large shops were designed in the same simple interchangeable manner, except that provision for crane runways required a few fabricated members, and a column spacing 35' x 20' instead of 20' square. In the design of all these shops and storehouses only 148 different members were used. This made replacement of members lost in transit wonderfully easy, avoided embarrassing delays in erection, and in many ways simplified and hastened the work of the construction force in France.

At Is-sur-Tille was an advance base located near the front lines. It consisted of one light shop 240' wide and 500' long, used partly as a storehouse and partly as a machine shop, and one typical storehouse 240' wide by 500' long. This plant was fully equipped for handling minor repairs of every kind. It was to take care of all work within the scope of its machine capacity until the shops at the rear could be completed, after which it was to serve as a repair point for light work, saving a long trip to the rear for minor repairs on equipment which might be very badly needed. This plant was erected under Stone & Webster supervision, and was known as plant "A."

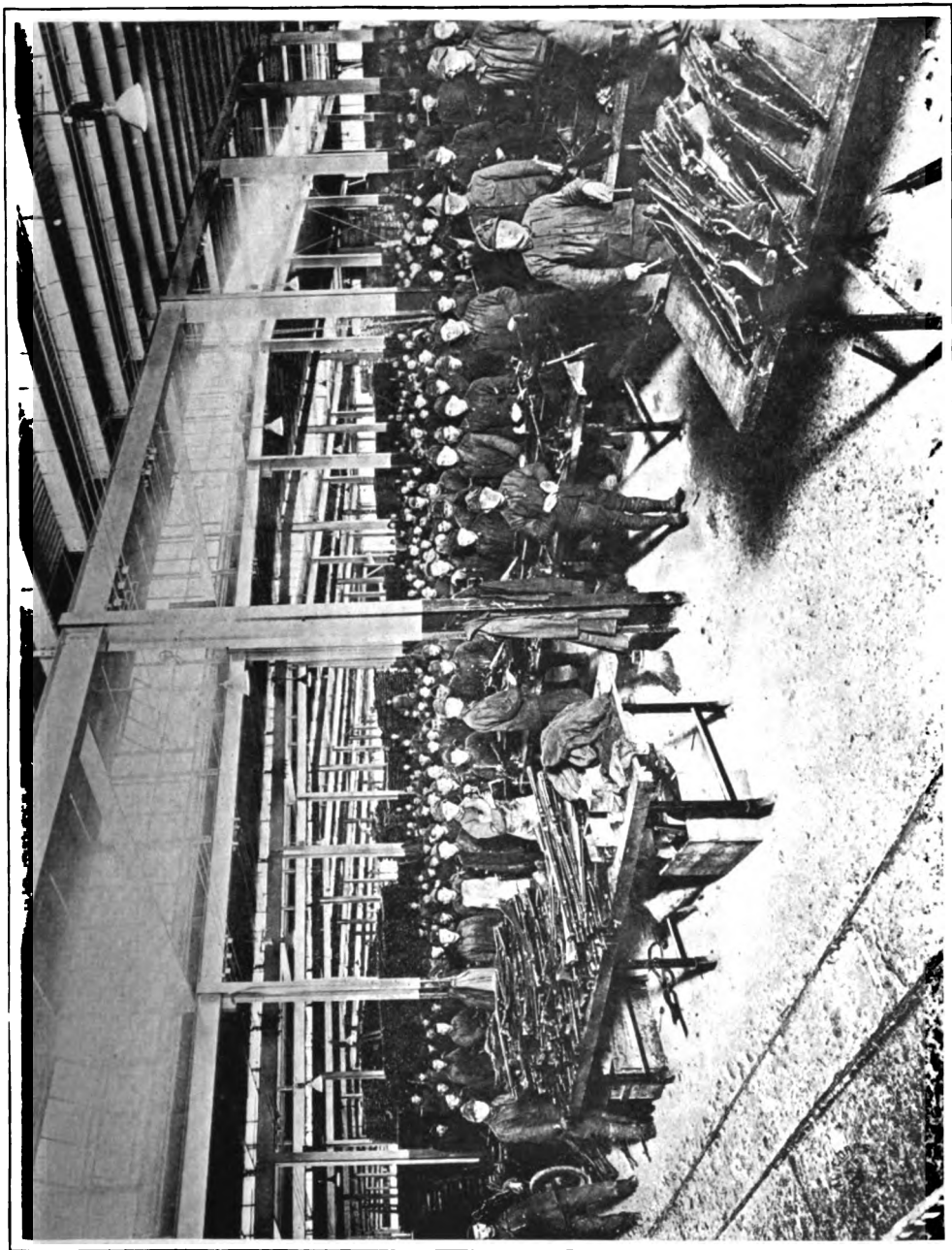
Plant "B" was the main repair base located far behind the lines at Mehun-sur-Yevre, about ten miles west of the city of Bourges. It consists of the following:

2 Gun Shops, each	245' wide x 600' long
1 Reamer Shop	180' wide x 240' long
1 Carriage Machine Shop	227' wide x 500' long
1 Carriage Assembly Shop	240' wide x 500' long
1 Woodworking Shop	200' wide x 320' long
1 Forge and Foundry	160' wide x 245' long
1 Paint Shop	40' wide x 60' long
1 Substation	40' wide x 60' long
2 Storehouses, each	240' wide x 500' long
1 Administration Building	80' wide x 150' long
1 Acetylene Plant	60' wide x 120' long
1 Compressor Plant	60' wide x 160' long
1 Storehouse	240' wide x 500' long
1 Canal Pump House	20' wide x 40' long
1 Booster Pump House	20' wide x 20' long

This plant was fully equipped with railroad facilities,



PERMANENT DERRICK AT AMERICAN BASE, MEHUN-SUR-YEVRE



SMALL ARMS REPAIR SHOPS, AMERICAN ORDNANCE BASE, MEHUN-SUR-YEVRE

sidings, electric cranes, locomotive cranes and permanent derricks. A complete water supply was installed and a ten-mile electric transmission line was built connecting the plant with the French power station at Bourges, furnishing electricity for light and power. Plant "B" was erected under Stone & Webster supervision, as was also plant "C," consisting of two storehouses, each 240' wide by 500' long, located at Gievres.

Plant "D" was designed for reloading and reforming cartridge cases and was to be located at Mehun, adjoining plant "B." It was to consist of 109 buildings varying in size from primer magazines 20' square to case shops 240' wide by 520' long. On account of the possibility of getting this work done in French shops the construction of this plant was deferred and no work had been started when the armistice was signed. All material had been assembled at New York.

At St. Sulpice (near Bordeaux) was plant "E," consisting of one storehouse 240' wide by 500' long, erected by the Engineer Corps. Plant "F" at Montoir, consisting of four storehouses, each 240' wide by 500' long, was erected under Stone & Webster supervision. At Tours was located plant "G," which was designed to repair harnesses, webbing, leather and cloth goods. Part of the equipment required for this plant was installed by the Ordnance Department in existing shops owned by the French, and the balance was installed in the machine shop at plant "A," that is, at Is-sur-Tille.

Plant "H," at La Pallice, consisting of one storehouse 240' wide by 350' wide, was erected by the Engineer Corps, and was not contemplated in the original layout.

Plant "J," the Railway Mount Repair Shop, was located at Haussimont. It consisted of one building 110' by 180'. This shop was not considered in the original Base Depot design, but was built from materials intended for tractor shop and storehouses. It was provided with two ten-ton traveling cranes, a jib crane, and with machine, woodworking and forge shop tools. This plant was erected by the Ordnance Department.

Several storehouse buildings not required by the tentative layouts for these seven subdivisions were included in the early purchases, with the expectation that additional storage capacity would be established at different distributing points. Two of these storehouses were turned over to the Engineer Corps and were erected by them at plant "A" for use as bakeries.

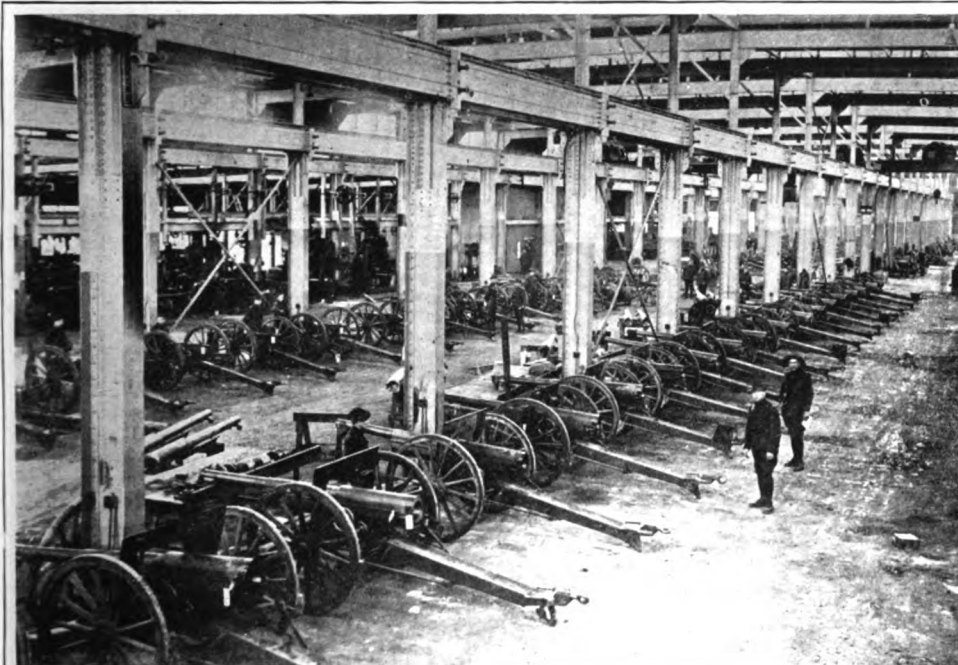
The following statement shows the tonnage and value of all material purchased, lost at sea, and landed in France:

Amount Purchased	Tonnage	Value
Structural Steel	24,600	\$3,100,000
Building Material	20,000	2,600,000
Machine Tools	8,000	5,200,000
Electrical Equipment	3,000	1,700,000
Mechanical Equipment	2,400	1,400,000
Supplies and Stock	4,000	1,500,000
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	62,000 tons	\$15,500,000
Amount Held in United States		
Structural Steel	6,200	\$650,000
Building Material	4,000	500,000
Machine Tools	2,500	1,600,000
Electrical Equipment	100	100,000
Mechanical Equipment	200	100,000
Supplies and Stock	500	150,000
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Total	13,500 tons	\$3,100,000
Amount Shipped to France	Tonnage	Value
Structural Steel	18,400	\$2,450,000
Building Material	16,000	2,100,000
Machine Tools	5,500	3,600,000
Electrical Equipment	2,900	1,600,000
Mechanical Equipment	2,200	1,300,000
Supplies and Stock	3,500	1,350,000
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	48,500 tons	\$12,400,000
Amount Lost in Transit		
Structural Steel	400	60,000
Building Material	10	10,000
Machine Tools	210	140,000
Electrical Equipment	30	15,000
Mechanical Equipment	50	25,000
Supplies and Stock		25,000
	<hr/>	<hr/>
Total	700 tons	250,000
Amount Landed in France		
Structural Steel	18,000	\$2,390,000
Building Material	16,000	2,090,000
Machine Tools	5,300	3,460,000
Electrical Equipment	2,850	1,585,000
Mechanical Equipment	2,150	1,275,000
Supplies and Stock	3,500	1,350,000
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Total	47,800 tons	\$12,150,000

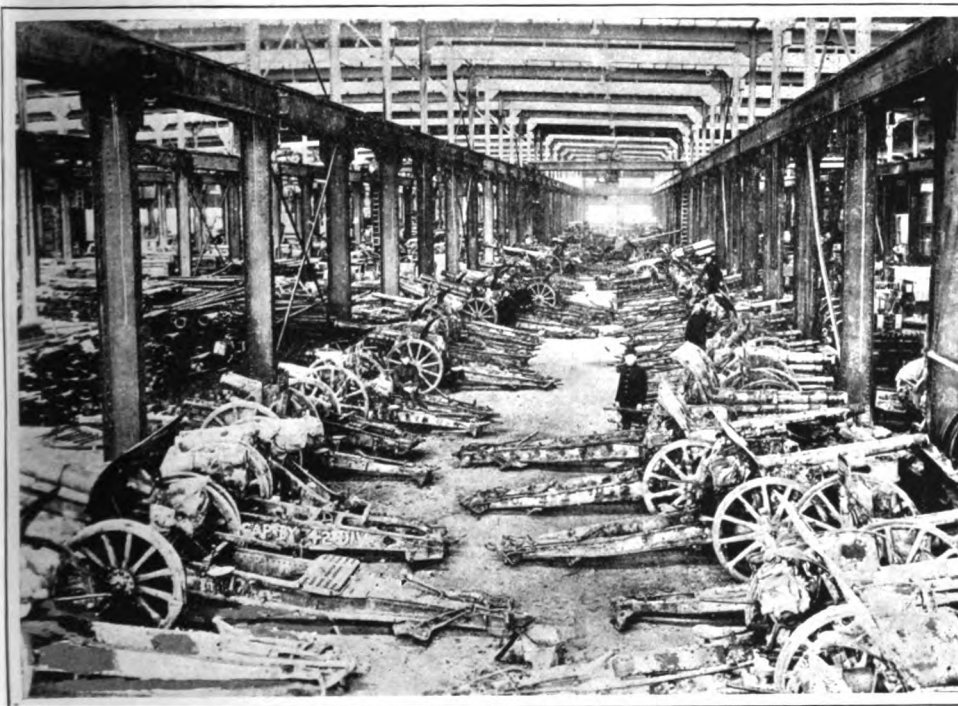
When the armistice was signed all shipments overseas were discontinued. Frames for 12 typical storehouses and for 60



DAMAGED GERMAN GUN IN CANNON REPAIR SHOP AT THE AMERICAN ORDNANCE BASE



CANNON REPAIR SHOP, AMERICAN ORDNANCE BASE, MEHUN-SUR-YEVRE



CAPTURED GERMAN GUNS, AMERICAN ORDNANCE BASE, MEHUN-SUR-YEVRE

or 70 smaller buildings remained in stock at the point of embarkation.

The electrical and mechanical features of this great development are exceptionally interesting. The electrical work covers the light and power supply for the seven subdivisions and its distribution over the different groups and in the buildings themselves. Lighting consisted chiefly of 200 to 500-watt nitrogen filled lamps in steel reflectors, designed to give a high intensity of general illumination. This was supplemented in special cases by flexible fixtures on benches and extension cords for machine tools. Shops with excessive fire hazard were lighted by an improved type of gas proof unit. The power for machine tools, cranes, gun shrinking furnaces, welding outfits, etc., was supplied at 440 volts, 3-phase, while machine tools that required adjustable speed drive were provided with 230-volt direct current motors. A total of 950 motors and 200 transformers were provided. At plant "B" — that is, at Mehun — alternating current was supplied through a 2,300-volt, 3-phase overhead distribution system with distributing transformers at each shop. Direct current was taken from the same system through four 1,000 k.w. motor generators located in the Reamer Shop.

A separate power station was originally contemplated to furnish power for plants "B" and "D." Equipment for this station was purchased and most of it was in transit to the point of embarkation when arrangements were effected between the Ministers de l'Armement and representatives of our General Staff in France to secure power from an existing station in Bourges, ten miles from plant "B." In the course of negotiations it developed that it would be necessary for us to provide transformers for the transmission line and four additional boilers with their accessories for this station before the required amount of power could be supplied. Our promise that we would provide these boilers and transformers enabled us to conclude the negotiations and obtain a definite agreement for the supply of power. The boilers were fabricated in France from plates purchased in the United States.

On the extension of the power station and the building of the transmission line the engineers of Stone & Webster acted as the sole representative of the Ordnance Department and the Technical Board, and worked in close co-operation with the representatives of the Ministers de l'Armement and the French contractors. In this connection they checked the engineering

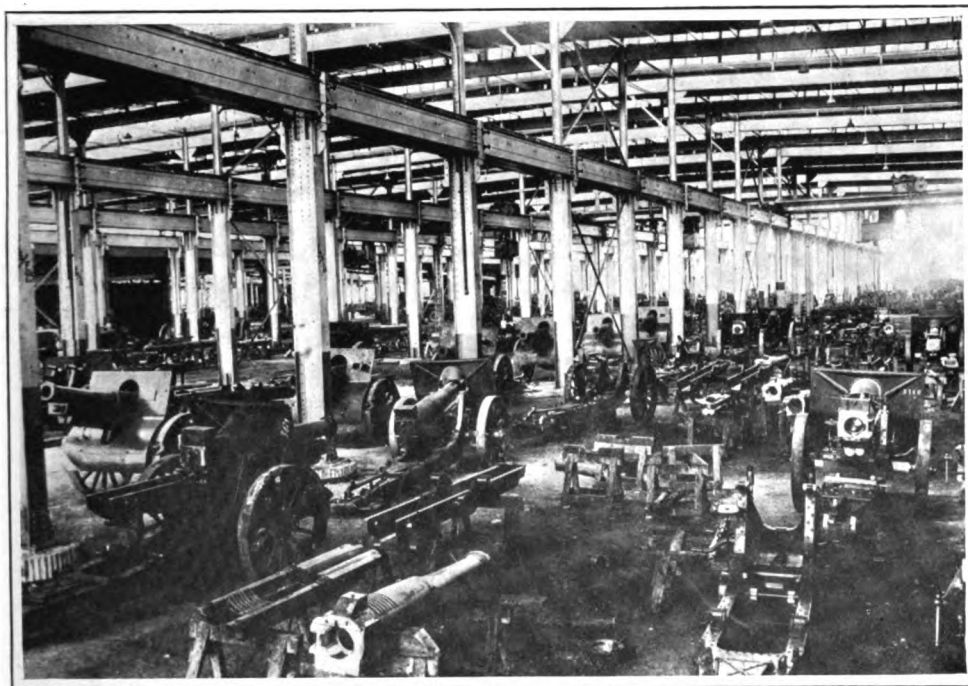
designs, approved all requisitions for materials and equipment, traced all car shipments, and followed the construction progress in the field. As a result of their efforts the transmission line was completed and power delivered at plant "E" on October 1, 1918, and adequate power would have been available for the full operation of the shops whenever circumstances required it. The transmission line would have been extended to plant "D" (Mehun) if that plant had ever been put in operation. It had also been planned to extend the line to Gievres and Romorantin for use of the Quartermaster and Aviation Departments. The engineering features of the design were studied and the location of the line approved by Stone & Webster's representatives acting for the Technical Board, but with the signing of the armistice the scheme was abandoned.

To provide electric power and light for plants "A," "C," "E" and "F" and other projected plants, oil engine generating sets were purchased, but this equipment was not installed as these plants were ultimately located within reach of local sources of supply.

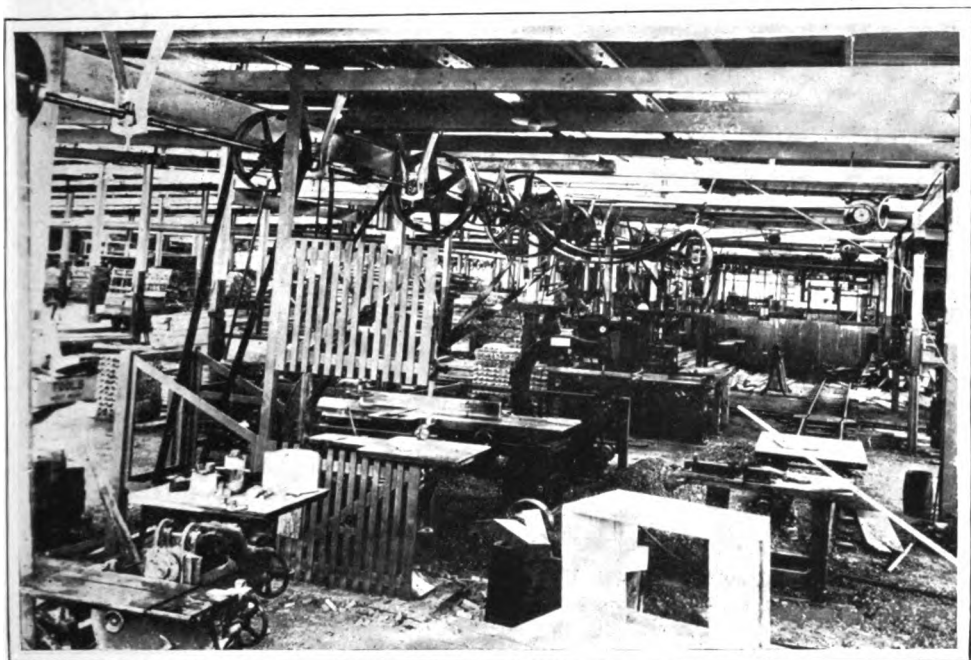
Mechanical services throughout the shops and storehouses is furnished by traveling cranes, jib cranes, hand hoists, industrial track and gravity conveyors. There are 40 electric traveling cranes of ten to thirty-ton capacity, serving the larger machine tools. There are 200 jib cranes, 350 I-beam trolleys and 400 hand hoists in the huge tractor repair plant. For the storehouses there are 10 miles of industrial track, 400 flat cars and 200 turntables, and in the reloading plant are four miles of gravity conveyor.

Four 15-ton steel, stiff leg derricks with hoisting engines, two 15-ton standard gauge locomotive cranes and four light traction cranes were provided for general service at plant "B."

The main problem of the American Ordnance Base Depot lay in the design and purchase of machine tools for the repair of army ordnance. The unusual requirements of the service necessitated many new machines and countless special attachments, and in this phase of the project the service rendered by Stone & Webster was particularly helpful. They were able to assemble very promptly a group of engineers who proved themselves qualified to handle the innumerable details of this work. Time studies were made, schedules of operations were established and gigs, fixtures, tools and gauges were designed to meet the special needs. Seventeen hundred machine tools



REPAIR SHOP, AMERICAN ORDNANCE BASE, MEHUN-SUR-YEVRE



REPAIR SHOP, AMERICAN ORDNANCE BASE, MEHUN-SUR-YEVRE

were purchased, varying in size from small electric-driven hand riveters, weighing only 15 pounds, to huge machine-driven gun boring lathes, 60' in length, weighing 75 tons, and requiring two large freight cars to transport them to the port of embarkation.

The gun relining shop contained 24 engine lathes, 209 gun boring machines, 66 grinders, 34 miscellaneous machine tools, 2 electric gun heating furnaces and a shrinking pit. All of the tools were provided with individual motor drive. The large number of guns of each size and the constant repetition of the processes of relining made it imperative that this shop should be laid out on a manufacturing basis; the various operations were, therefore, subdivided, and specialized to obtain a speedy production and to admit of their execution by operations in place of skilled mechanics. The tools selected were mostly of single purpose types and specifications were carefully drawn to meet the exact requirements. The boring of long taper holes to receive liners and the methods of extracting old and of inserting new liners presented problems of unusual interest. A number of graded taper reamers were provided to be used in sequence for the boring of the long taper holes, and in addition, two electrical furnaces and the usual shrinking pits, a number of hydraulic compresses from 450- to 1,000-ton capacity were provided for extracting and inserting liners. For fitting the exterior tapers of the liners to the interior of the guns specially heavy cylindrical grinders were provided. All of these tools were equipped with chucks, gigs, holding, cutting, measuring and inspecting tools, and with gauges for every detail of the work.

The carriage repair shops contained 370 machine tools of every variety and size found in arsenals and jobbing shops doing this kind of work. The multiplicity of gun carriages and vehicle parts, their great variety in shape and material, and the uncertainty of the extent and nature of the damage that might occur to them, made it advisable to conform to the general plan of a jobbing shop laid out on a gigantic scale; the machine tools in general were grouped by classes and sizes, with the addition of a general manufacturing tool room, a special optical and instrument department and the necessary assembling floors.

The woodworking and forge shops supplemented these carriage repair shops, and were designed especially for the re-

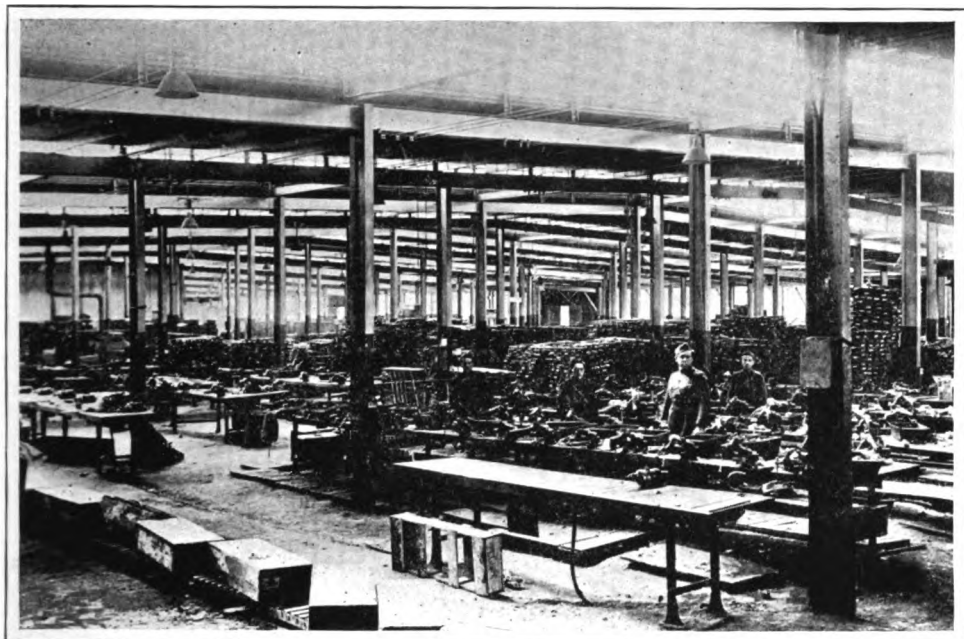
pair of the heavy wheels used on gun carriages and limbers. Special tools were provided for the making of hubs, spokes and felloes, for the welding and rolling of heavy steel tires, and for the rapid assembling of complete wheels.

All tools were subjected to the most rigid inspection by trained and experienced engineers employed by Stone & Webster, and on large contracts these inspectors were located continuously at the manufacturers' plants. This close inspection resulted in the detection of many errors and their correction at the factory, and avoided the expense, delay and annoyance of their correction in the field.

For construction purposes revolving steam shovels, hoisting engines, concrete mixers, portable boilers, rock crushing plant, road rollers, pumps, gasolene engines, air compressors and all necessary small tools, camp commissary equipment and waterproof clothing were provided.

Early in the development of the project Stone & Webster developed a schedule of construction operations and of the progress which they expected to make, and from this worked up a schedule of shipments necessary to meet the construction program. In the early stages of the development deliveries at the port of embarkation were very satisfactory, due in large measure to the vigorous and effective manner in which Stone & Webster followed the expediting of material through the various factories and in transit. A supply of material in excess of the schedule requirements was allowed to accumulate at the port of embarkation, so as to permit the speeding up of the construction program in France if this proved possible. After a few months, however, the Railroad Administration placed an embargo on all shipments, which closed down the receipt of material at the port of embarkation. It was found, however, that instead of the possibility of speeding up the construction work beyond the original schedule, conditions were such that the work proceeded at a very much slower speed. The net result was that construction was impeded by lack of material in France, and there was always a supply at the port of embarkation to fill out the cargo space that was available.

The records kept by Stone & Webster of shipments, deliveries, lighterage, etc., were from the start complete and accurate. They kept the Ordnance Department and their own representatives in France fully informed as to the status of all material on order. The work of their force at the port of em-



SMALL ARMS SHOP, AMERICAN ORDNANCE BASE, MEHUN-SUR-YEVRE



SMALL ARMS REPAIR SHOP OF AMERICAN ORDNANCE BASE

barkation was effective, and that effectiveness and the completeness and accuracy of the records kept were largely responsible for the regularity with which the Embarkation Service allotted the cargo space, and for the net result that out of a total of 58,000 tons of material required for the complete project, 45,000 tons had been lightered before the armistice was signed. The material was shipped in nearly 150 boats, and the only loss sustained was one consignment of 700 tons valued at \$250,000 on the steamer "Montanan," which was sunk August 19, 1918, presumably by a German torpedo.

The Transportation Department of our army took full responsibility for delivering all material from the ports of debarkation to the various plants inland, and Stone & Webster's responsibility stopped with the proper marking and routing of the cars at the point of shipment. Of over 5,000 cars shipped inland many were delayed and frequently reloaded, but only eight failed to reach their destination. It would be difficult to better this record even in times of peace, and for it the U. S. Army Transportation Department is entitled to high credit.

Construction progress in France was at times very slow and discouraging, owing to the difficulty of determining the actual requirements of the service, to transportation difficulties, to the continual shifting of labor, and to the scarcity of such building materials as had to be bought locally. In spite, however, of all these handicaps the storage space and shop facilities were always ready in advance of the requirements. Construction work ceased on November 25, 1918.

Attention should be called to the exceedingly interesting pictures which accompany this article. Those who scrutinize them carefully will undoubtedly get additional light on the magnitude and method of the great war. A romantic interest attaches to two of them by reason of their disclosing a portion of an old Roman road. A stretch of this road, a good many miles in length, intercepted the field in which the Stone & Webster engineers were at work, and one of the pictures shows that the great plant at Mehun abuts directly on it — it will be seen on the left of the photograph. The road, with the top soil which it has acquired during the centuries, rises about three feet above the level of the surrounding country. It is fifteen feet wide and the character of its construction attests both the enterprise and the skill of the builders. The foundation is based on sand, and it is said to have been covered with sand

in order to accommodate the elephants employed in the Roman service.

It is very gratifying to Stone & Webster forces to know that in recognition of his exceptional service to the Government, Colonel King, who had entire charge of this undertaking, was recently awarded the Distinguished Service Medal. The award, as announced in the press, is as follows:—

“Subject: Distinguished Service Medal.

“Under the provisions of cablegram No. 2830, received from the War Department, March 1, 1919, the commander-in-chief, in the name of the President, has awarded the distinguished service medal to you for exceptional meritorious and distinguished services as set forth below.

“Col. D. M. King, U. S. A.

“For exceptionally meritorious and distinguished services.

“Displaying exceptional technical knowledge and comprehension of existing conditions, he ably organized, installed and operated in the services of supply, and in the army area, an extensive chain of repair facilities for the maintenance of ordnance material. With tireless energy and unfailing devotion to his important duties, he perfected a loyal and efficient organization, capable of meeting all demands made upon it.”

CHILEAN SIGHTS

BY ALBERT A. NORTHROP

[This article is a continuation of the journal of Mr. Albert A. Northrop, the first instalment, appearing in the June, 1919, issue of the Stone & Webster Journal. Mr. Northrop spent some months in Uruguay in connection with construction work done by Stone & Webster in that country. He returned to the United States the latter part of 1917 by way of the Straits of Magellan, the West Coast of South America and the Panama Canal. The present instalment of the Journal treats of Mr. Northrop's experiences on the West Coast.]

Dec. 2, 1917: Completely out of sight of land, we are having the second day of rough weather. Yesterday we pitched and tossed, the propellers pounding out of water as the bow would bury its nose into a wave, which occasionally would sweep completely over the boat deck. Today we have altered our course to the north and are more in the trough of the sea. We have stopped pitching and are rolling, which, to many of the passengers, is no better than the bronco motion of yesterday.

Today is Sunday, but the parson and most of the passengers are flat on their backs — so there is no service.

Dec. 3, 1917: Ten or fifteen albatross are following the ship — in fact, we have had a few ever since we reached the southern seas. When we were in the heavy winds near the straits it was noticeable that they were able to sail into the teeth of the wind as fast or faster than the ship, without a movement of the wing. Now that the wind is less, they occasionally have to make some effort to keep going. When they light in the water they hold their wings high, and fold them most carefully to keep them dry. In rising against a wind three or four flaps are all that is necessary to gain their headway, when they spread like the wings of an aeroplane and sail away at will. It is getting noticeably warmer — perhaps 65° in the shade.

Dec. 4, 1917: Land is visible on the right, the first we have seen since leaving the straits. By noon we come into the half-moon harbor of Coronel, where the coal mines of Chile are located. Land rises abruptly into well-defined hills, and the coal mines from which the ship will fill her bunkers are almost in sight. This mine has been in operation for more than thirty years, and furnishes excellent coal. The stokers say "it is alight almost before it has left the shovel at the furnace door."

In the harbor is a German passenger ship that had been there since the war began and two children have been born to the stewardess in that time.

Near us is a large Chilean transport taking on coal, which is brought alongside in barges and transferred to the ship in huge rope-bound canvasses, as a farmer's wife would gather an apron full of apples. The Chilean laborers show their Indian blood very plainly and are a stolid, square-faced lot.

We have decided to leave the ship here for the present and proceed by train to Santiago, Chile, where we will stay with friends, for it will be a week or ten days before the ship is ready to sail for Valparaiso.

Upon inquiry we find that a train leaves Coronel at about 5 P.M., and connects at Concepcion de Chile for Santiago two hours later. When we arrived in the harbor the bay was calm, but the boatman with whom we negotiated said that the wind would come in at 3. P.M. sharp — and sure enough, the outer water is already ruffling. We hurry our arrangements and go off a little after three — none too soon either, for we bob like a cork in the double-pointed whale boat and have to watch our step in climbing on to the iron stairs of the rickety pier.

Once ashore a "portero" takes our things in hand and we are conducted along the dusty railroad track to the cool brick station. Arriving two hours ahead of train time, we rather excite the curiosity of the waiting natives, but we settle our baggage on the damp cement floor and welcome the fresh breeze blowing directly in from the bay, where the waves have risen so high that now landing from a small boat would be hazardous.

Coronel has one bright spot — and only one. A pretty little Plaza or park, where stands a statue and some roses. Outside of that, squalor is everywhere. The low adobe plastered houses, roofed a dull brown, half-round tile, swarm with Indian women and children that show little or no ambition. The streets — paved at intervals with fairly good square blocks of stone — are dirty and used principally by the slow moving oxcarts with their enormous wheels and high flaring sides, the latter held together by rawhide thongs. The outfit usually consists of four bullocks pulling and two auxiliaries in the rear for emergencies. This oxcart is characteristic of the country and does well enough over the very poor roads. They can haul a load of about three tons. The yoke is fastened to the horns, as in the old Roman days, instead of bearing on the shoulders as is usual in North America. The forward pair of animals are attached to the cart by loosely-twisted rawhide thongs, making

a rope as thick as one's wrist. This passes through a groove in the yoke of the wheel team and is the only harness used.

We leave Caronel at quarter to five and reach Concepcion, Chile, at six, which gives us an hour for dinner. At seven we settle ourselves in the comfortable compartment of an American built sleeping car and start on our night's journey to Santiago — the capital of Chile.

The country we pass through is irrigated by mountain streams and is green with growing things. The predominant features of the scenery are the weeping willows and the splendid Norway poplars. They line the irrigation ditches and form a striking contrast, the long flowing willow branches drooping to the ground and the militant poplars standing so erect in long orderly rows. Grain, alfalfa and hay alternate with acres and acres of beans just starting from the ground.

Santiago, about 2,000 feet above the sea, is a city of about 450,000 inhabitants and very busy and prosperous. It still is backward in many ways, but the heart of the business section is very much up to date. A few of the streets are paved with asphalt, others covered with Belgian block, but many of the residence streets are beds of dust which rise in great clouds when a cart passes. The dry summer season is very dry indeed with never a shower to wash the dust from the leaves, so that everything assumes a discouraged brown color.

The street cleaning and sprinkling departments are marvels of originality. A whisk broom and a Standard Oil can, a peon and a battered homemade dust-pan — such was the outfit cleaning the street at one of the principal plazas. The peon would sweep up the refuse, holding the broom in one hand and the battered dust-pan in the other and when the receiving can was full he would tramp down the contents with his feet and make it hold more. Contrast this with Montevideo, with its covered dust cans on wheels and stiff, long-handled brooms.

In the most prosperous part of the city the streets are sprinkled by a motor-driven sprinkler of the latest type. A little farther out a cart is used that distributes the water by a stream from the barrel above, falling on a whirling table of wood.

On one of the principal thoroughfares water is simply scooped up from the rapidly flowing stream in the gutter and thrown onto the street from pails by ragged peons.

The houses in this comparatively waterless country are largely of adobe brick, plastered and painted. In former days

the houses were made with very thick walls, perhaps three feet through. As one old resident expressed it, "They built a heap of adobe and dug the rooms out of it." The present method is to build a framework of wood as if to receive board sidings. Instead, the walls are made by filling in with bricks of sun-baked adobe, standing on edge. These are plastered and painted. The garden and street walls are of adobe brick, roofed with the familiar half-round red tile. It is evident that if the rain can be kept out of the top of a mud structure, the storms will have little effect upon it. But it is small wonder that an earthquake shakes the city to the ground.

The street cars are frequent and slow. The social chasm between "roto," or laborer, and "Caballero," or gentleman, is maintained by double-decked cars and double-decked fares. The gentle born "Caballero" pays 10 centavos, or $2\frac{1}{2}$ cents, and rides stuffily inside; the roto, or rough neck, pays 5 centavos, or less than 2 cents, and sits on the roof in the fresh air. Beyond a certain distance the fare is doubled, but the distinction is the same. After 9 P.M. the fares within the city limits are doubled; no doubt on the hypothesis that the poor man does not travel at night, and those who ride for pleasure can well afford to pay the extra fare.

The conductors are usually women. Their white aprons over black dresses serve as cash registers, for the money is kept in the two apron pockets. A black straw hat, turned up at the back to make way for the coil of jet black hair, and turned down in front to form a visor, completes the uniform. The tickets are torn from a roll in the hand, and are checked up by an inspector who tears them diagonally across. It is said that the women conductors were first used during the war with Peru and Bolivia. They proved themselves so efficient and so inexpensive that the men never got back their jobs.

Perhaps if women were employed as mail carriers that service might be improved. At present a charge of 5 centavos per letter is made to insure the letter reaching its destination. Otherwise, the postman might throw it away to save himself the trouble of delivering it. The result is that many own lock boxes and call at the post office. And this in a city of 450,000 people. Of course, the vast majority of the poor class do not receive mail at all.

Another branch of Government service which apparently has room for improvement is the police department. "Shall I

report it to the police?" asked a recent arrival when his trousers were stolen through an open window. "No. Cross your fingers and be thankful that you fared no worse," answered his experienced friend. "If you report it to the police you will only be annoyed and will get no satisfaction." In strong contrast to this seems to be the efficiency of the "Carabineros," or rural mounted police. They are a branch of the army and are well mounted, well armed and unafraid. Common drunks (and there are many) taken by them are sobered up in the morning by treating them to a cold plunge, and then they are whipped to get their blood in circulation. They are shown little mercy and the apprehended "bad man" is shown less.

An interesting feature of Santiago de Chile is its hills. The rock of St. Cecelia rises hundreds of feet, right out of the heart of the residence district. From this rocky height one may get a splendid view of the entire city. A little farther out "San Cristobal" rises much higher, a bold dome surmounted by a colossal figure of the Virgin — her halo at night lighted by a circlet of electric lights. Others, still farther away from the foothills of the mountains in the distance.

The state railroad system seems to be very efficient. The ride all night from Concepcion, north to Santiago, and from Santiago to Valparaiso was cheap and quickly made. The express from Santiago to Valparaiso takes about $4\frac{1}{2}$ hours, and costs about 16.40 pesos, or \$4.10 U. S. gold. This is probably at the rate of 3c per mile. English locomotives haul American-built cars and burn coal from the local Chile coal mines. The trip is from the Santiago Valley over a line of low mountains to the coast valley. Wherever irrigated, the land produces lavishly. Otherwise, it is barren.

Valparaiso, situated on a half-moon of a bay, started on a flat but has spread out on to the rough, deeply-gullied hills behind. It has about 200,000 inhabitants. There are fifteen distinct hills covered with houses. The general impression is that the city never intended to crowd itself so far up the hills, but it just couldn't help it.

The upper slopes (one may not call them levels) are reached by inclined elevators or "ascencors." Vehicles must zigzag up roads built in the valleys, separating the hills. They are more like gullies than valleys, for the sides rise very steeply. Altogether trucking is not an easy matter to the upper town. The summer resort for the city is Vena del Mar, about a twenty-

minute ride from the heart of the city, and is reached either by tram or by steam cars. It is a beautiful suburb, fragrant with masses of flowers, roses, geraniums, etc.

Valparaiso has a good water supply and sewage disposal. The real problem, however, is to take care of the storm water when a heavy downpour hits the city. The hill part of the city is like the sloping roof of a house and the eaves are the business streets along the water front. When it rains hard the water and sand pour off from the hills, and people take to boats. There is a large covered storm sewer built beneath the street, almost the width of the roadway and six feet deep. At times this flows under pressure and bursts upward, disrupting the pavement. Before the earthquake the streets were much lower, but now have been raised to help avoid the deluges.

The water of the bay was calm when we were there, but we were told that during a northwest storm, spray from the waves dashed up over the water front houses. None are built on the water side, but across the street, on account of the occasional force of the waves.

The streets are paved with various kinds of pavement. Asphalt vies with stone block cemented over — in the business section — but in the less important streets they both give way to the ordinary Belgian block. The street car system, we are told, is a German concession. Second-class passengers ride in the upper deck, and the more fastidious ride in both the first car and trailer down stairs.

The Valparaiso harbor is favorable for all but the northwest winds. An extensive port improvement is underway, but is progressing very slowly. It will consist of a wall around the semi-circle of the water-front with sufficient depth to come alongside, and sufficiently far out to give space for warehouses between the street and the wall. It is being built of concrete blocks below tide, and of rubble facing with concrete filling above the water level. At present there is an iron dock that one or two vessels can tip up to, but it does not help much. As a result, almost all the ships lie out in the harbor and unload into huge overgrown rowboats perhaps fifty feet long and half that width. These are rowed by three men, two at the bow and one at the stern. They use huge long sweeps and row standing.

Passengers go ashore in ordinary rowboats holding three or four people, and must take their chances in jumping from a

bobbing boat to the wet and slippery stairs of the landing. There are a great number of boatmen, and their runners solicit one's patronage up in the centre of the town. The fare is a peso each way, or about 50c gold round trip. The harbor holds four distinct classes of boats, the rowboats, the barges, or lighters, interned German sailing vessels and steamers of all classes.

Dec. 12, 1917: At about 5 P.M. the "Orita" pulled up anchor and started north on her homeward trip. For until Valparaiso is reached it is "outbound." At 3 P.M. everyone was assembled in the dining saloons and their passports were identified and examined by the purser and the company's agent ashore. There were eighty first-class passengers to be distributed all the way from Coquimbo, the next stop, to the Panama Canal and the States. The majority are Americans, with a goodly sprinkling of Spanish.

Dec. 13, 1917: We left Valparaiso yesterday afternoon — in no great hurry, for Coquimbo (pronounced Kokeembo) would be reached in the early morning, before working hours, anyway. The town claims 16,000 people, and exists because of its well-protected harbor. It is a sad looking place, clambering up barren rocks or content to remain down on the little level space between the sea and the rock hillside. The state railroad runs the length of the main business street, which boasts of no pavement and apparently of no ambitions. Only burros can clamber up the steep hillside passages upon which the houses face, by courtesy called streets. In two cases, the hillside was so steep that the houses formed steps, the roof of the one below being even with the doorstep of the one above. Water, vegetables, meat and groceries all are carried in raw-hide baskets on the backs of the tiny grey burros. Little ice cream carts, hauled by a dog, a man or a burro are frequently seen. In Montevideo or Buenos Aires ice cream is practically unknown, while in Santiago or Valparaiso, or in the arid towns, it is peddled everywhere.

Although the town looks grey and cheerless, the school children of the better class are as bright and clean and well-dressed as in a metropolitan city. The town boasts of a water supply, which, however, has only enough pressure to carry it half way up the hills, so that the upper houses must send the children to fetch it in the ever-useful Standard Oil can.

A most interesting bird seen in the harbor is the "piquero." It is a cross between a duck and gull, and catches fish by diving

from 100 feet or so in the air. They sail over the bay on the sharp lookout, and when they see a fish, down they go with the speed of a javelin. A sharp splash, like a stone "cutting water," marks the spot where they struck. Two or three seconds later up they pop full length out of the water and take to the air once more. Sometimes two or three will hit the water at the same time.

This record would not be complete without a word about my search for a vacuna rug. You know, of course, that the vacuna is a type of llama, or pack animal of the Andes. Its fur is of the softest silk, and tawny lion in color. The rugs sell from \$40 to \$90, depending upon the quality. I have priced them from Montevideo to Coquimbo and have dug them up from pawn shops, bazaars, "Fifth Avenue Shops," on the train, in curio shops, at money changers, and even at sun-baked Coquimbo from a guide who remarked that money that would buy trousers and shoes was worth more to him than a vacuna rug in Coquimbo where it never gets cold. I have not yet got one, but am still seeking.

We left Coquimbo in the afternoon and all the next day were in sight of the mountains until we dropped anchor off Antofagasta at about 6 P.M. Never before had we seen land upon which the rain seldom, if ever, falls. No green tree, no green thing was in sight, but the mountains coming down into the sea were white with the disintegration of ages. At one place there was a veritable river of sand, with distinct lines of flow like a glacier. It ended abruptly at a cliff where it spilled off into the sea. The general colors are light grey, white and brown with a decided pink tone to the higher reaches, seen through rifts in the clouds that almost continually shrouded the summits.

Dec. 15, 1917: The harbor of Antofagasta is a large semi-circle, opening directly to the west with no protection whatever on that side. It is not really as well protected as Valparaiso or Coquimbo, the latter being like a mill pond in comparison. Passengers are taken ashore in narrow, double-pointed row boats, which are handled with consummate skill by the boatmen who swam out to the ship like a flock of gulls. The boats are remarkably seaworthy, as evidenced by one of them taking safely to shore a family of father, mother, two maids and six children, the oldest not eight and the youngest too small to be frightened. In the other end of the boat was a collie dog and

their luggage. Two boatmen completed the load. Freight is unloaded into huge canal boat-like lighters, roundly pointed at one end. There is no dock to which the steamers can tie up.

The town itself lies low, and is brown with dust against the gentle sloping hillside, which extends back in the grey-brown sand to the abruptly rising mountainside. Upon the smooth side of the latter an enterprising American has carved in letters large enough to be read miles at sea, an exhortation to drink a certain kind of tea. One of the most prominent features of the town, as seen from the boat, is the forest of crosses in the cemetery that lies farther up on the hillside. The crosses are as grey as bleached bones and remind one of them. Along the shore to the south of the town tiny specks can be seen moving along what must be a road. They are motor cars which one passenger swears he can identify with his glasses as Fords. That is a very safe guess, for everywhere we have gone we have found the Ford outnumbering the other cars. In the harbor are the interned German ships, as surely to be found there as are the Fords on land.

Dec. 16, 1917: I am going ashore today just to see how dry a place like Antofagasta can be. The trip in the small row boat is anything but pleasant with the chance of a ducking at the landing stage of the ship. The swells cause the boat to rise and fall six feet or more, and one must watch one's chance to jump into the boat just as it is topping the crest. In going ashore one sees other row boats. As we rise on the crest of a wave we can see the entire boat. As we sink into the trough, all we can see is the tops of the passengers' heads in the other boat, and it looks as if they were going under.

The shore landing is made in the protection of a tiny rocky point that serves as a breakwater for the small boats and the light steel piers. The latter are used solely to load and unload the 50-ton lighters that are towed out to the ships. In Valparaíso these can be rowed by three men to the ship, but at Antofagasta it is so much of an open roadstead that they must be moved by tugs. There is an ambitious plan underfoot for a harbor improvement that will cost about eight millions, but even then it does not seem that anything but the smaller boats will be able to come alongside. It is a busy harbor, eight or ten ships having come and gone during the four days we are at anchor.

The boatman's fee to shore is five pesos for the round trip. To natives it is four, but the tourist always must pay more.

One naturally asks why the steamship companies do not provide launches to take the passengers ashore. The answer is that the boatmen are under the protection of the Captain of the Port who gets his tribute from them and discourages any attempt of the steamships to make a change. In a way, too, they are under the protection of the Chilean Government, for they are considered as auxiliaries to the Chilean Navy, to be called upon in time of need.

The city itself, of some 60,000 inhabitants, is self-respecting and very much up-to-date. Miles of asphalt pavement, supplemented by Belgian block cemented over, and, in the poorer districts just the square stone, make it a well-paved city. As a natural consequence there are four hundred automobiles in this desert city by the sea. We are told that two years ago last August there were no pavements and no motors. The houses, as a rule, are of wood, which in this climate lasts indefinitely. Rain is practically unknown. We are told by a citizen that, "The last rain was year before year before last."

In striking contrast to the general aridness there is one plaza that is one mass of foliage and flowers heavy with perfume and moist with the smell of much watering. In the centre of the plaza is a monument given to the city by the British Colony. There is one avenue where trees are being planted. Holes six feet deep are filled with earth brought by ships, and then the tiny tree is soaked with water in its new bed. But, aside from this, one sees no green unless it be through the open door to the "patio" behind.

There is a water supply of pure mountain water, but it is so expensive it is not used lavishly. It comes 136 miles along the railroad, from one of the rivers flowing from the snow of the Andes. A sewer system serves the better part of the city. As there is a considerable British colony, there of necessity must be a golf course. The fairway is a pebbly stretch, and the putting "green" is packed sand. Not a spear of grass exists. It is a lively course, but a little hard on the clubs and balls.

The cemetery, upon nearer view, is almost entirely of wood. Some graves have wooden houses, large enough for one or two coffins, which may be seen through a glass window. Others have a little glass box which contains the photograph and a few trinkets, or have just the wooden fence and a cross. All are painted white, and the dates of thirty or forty years ago bear witness to the durability of wood in this climate.

In the stores are Lowney's chocolates, Gillette razors and Winchester rifles for sale. The vegetable stores are piled high with watermelons that are brought in by the shiploads. In fact, all the vegetables come by way of ship, usually from Peru. One sees all the vegetables one would expect to find elsewhere. Poor little weazened tomatoes, all wrinkled and no larger than walnuts, look forlorn and homesick.

Antofagasta is the port of entry for all this north part of Chile, and is an important port of export for tin, copper, silver, antimony and many other metals, some of which come from Bolivia. Those from the latter country can be easily identified because they are always in small packages, no heavier than fifty pounds to the package, so they can be carried on the backs of the llama, which refuses to carry more than a hundred pounds. If more is piled on him he simply lies down and refuses to budge until his load is lightened. The silver ore is put up in fat sausages of raw cowhide, with the hair-side out, and sewed with sinews. The other ores and concentrates are in stout jute sacks, while the tin sometimes is shipped in cakes as pure metal.

Dec. 17, 1917: The loading of metals is a slow process when it is taken from clumsy barges with rope and canvas slings. For four days the ship lay at anchor, while we, from our steamer chairs, could see the Tropic of Capricorn in the distance, Antofagasta being almost on the line. There was always a cool breeze, however, so one did not suspect the near presence of the tropics.

Dec. 18, 1917: All last night loading proceeded and at 6 A.M. today we hoisted anchor and in a few minutes we had crossed the line and were in the torrid zone.

Dec. 19, 1917: The morning finds us quietly at anchor in Mejillones, the port "just around the corner" from Antofagasta. It is a much better natural harbor than Antofagasta, and in the rising mists it is as smooth as glass. Not a ripple except that caused by the occasional seals that break the surface of the water. A crowd of gulls eager for their breakfast, hovering overhead, follow him and snatch the small fish which rise to the surface as the seal dives. The astounding sight, however, is the thousands and thousands of grey and white long-necked cormorants or ducks that manoeuvre in perfect order over the quiet waters of the bay. They sweep over the surface in endless lines until a school of fish is located, then quickly settle with only their long black necks sticking up above the water. Through

the field glasses they can be seen continually diving for the fish. Suddenly all come to attention as if a command has been given and then one by one the birds rise in the air, not in confusion, but already formed into single file as they rise. In this way thousands of birds take flight and each apparently awaiting its turn until at last the entire body is on the wing. They follow the leader absolutely, now waving into the air, now skimming close to the water and at times countermarching with the precision of soldiers, all wheeling at exactly the same spot with never a cut across nor an attempt to shorten the turn. They appear like a long waving ribbon of birds, so exactly do they copy the action of the one just ahead. When they have once settled and have begun to fish, the sea gulls that have tagged along fly back and forth, hovering over their diving friends, and pick up what they can, for the gulls do not dive. Occasionally a party of dignified-looking pelicans will fly by, now flapping heavily and then with wings taut, sail grandly, their bodies all but touching the water. This is the first place we have seen the latter, though there are great numbers of them as far south as Coquimbo.

Mejillones is a loading port for nitrates and metals. It is on the north side of a point and so protected from the south winds prevailing at this time. It is connected with Antofagasta by railroad, and to all appearances is a much more favorable port than the latter. Both towns have been destroyed in times past by tidal waves and earthquake.

It is a small village, half railroad and half town, for it exists only by grace of the railroad which occupies most of the space with its shops and yards. Here we load nitrates and copper concentrates. By seven in the evening we are loaded and again on our way. The lights of Tocopilla show on the dim coast line at about 9 P.M. Here is located a large copper mine.

Dec. 20, 1917: While the mists are still shrouding the town we glide slowly into the little harbor of Iquique (pronounced E-key-kay). From the port-hole as we are arriving the smooth rollers appear shot full of spray points. Upon watching closely we find that it is caused by the fins of large fish chasing their morning breakfast, which would occasionally leap clear of the water in their efforts to get away. Acres of sea are covered by this huge school of fish.

Iquique is the capital of Tarapaca, which province was ceded by Peru to Chile as a result of the Chile-Peruvian war

of 1879-1880. This province is rich in nitrate which Chile viewed with a covetous eye. No more need be said except that the province now belongs to Chile and is very liable to stay there. The town lies on a quiet little harbor well protected from any but a northwest wind and affords a good anchorage. A hull of a large French vessel lying on her side at the very inside tip of the harbor is evidence of what can happen, however, when a storm does blow into the neck of the bottle.

Probably the most lasting recollection of these arid coast towns is the stale stable smell which rises from the streets and is everywhere. Practically rainless since the first animal used the streets, copious water sprinkling of the accumulation of years only tends to accentuate the smell which rises with the moisture into the thirsty air.

Unlike Antofagasta, these streets are entirely unpaved and almost too high for the sidewalks, for, of course, as there is no rain, such things as gutters are unnecessary. The moistened dust is rapidly tracked to the sidewalks so that the general impression of a newcomer is summed up in the single disgusted exclamation "dirty." The houses are generally of wood. There are a few good-looking stores and there seems to be much business, though as yet there are few automobiles because of the unsatisfactory street and country road conditions. But one may hardly speak of country, for if one does not go into the sea there is nowhere to go but up. The railroad finds its way out by long zigzag gashes in the grey-brown mountainside behind, switch-backing back and forth until it disappears over the top in the distance. There are tennis courts and a golf course, because there are Englishmen, but one wonders where "country" enough is found to locate them. Unlike most of the coast towns in this arid region, she does not advertise her dead to the world, but has hidden the cemetery modestly away somewhere. At Antofagasta, next to the mountainside advertisement of tea, it is the most prominent part of the landscape.

Iquique now has a water supply that gives fire protection and water for those who can afford to have it piped into their houses. To the poor it is peddled from fat-bellied oval barrels mounted on carts. These are the first water carts I have seen in South America that do not leak. Water is too precious. The scarcity of it is only too apparent. One of our passengers who is going back to his home in El Paso, Texas, stopped at Iquique a year ago. The friend who met him then said that there were

five cases of typhoid at the hotel (his wife being one of the victims) and two cases of bubonic in the town. Incidentally, there are no sewers.

A complete system of light open horse cars serves the town and seems to be very popular. The fare is 20 centavos, or about 5 cents U. S. gold. As in other towns of Chile, the conductors are women or young boys, and tear off tickets from a roll hidden in a little brass cylinder. The color of the ticket tells the price. Later in the journey an inspector or "adjudante" boards the car and tears the ticket diagonally in half. This system of inspection is generally practiced in Uruguay, Argentine, Chile and Peru and does not admit of much "knocking down" by the conductor. The police are dressed in spotless white, with white pith helmets and appear very smart with their black belt and holster. They seem to be decidedly above the average in intelligence and contrast most favorably with the police seen at Santiago. They are probably a branch of the army "Carabineros."

Aside from the two or three little plazas with their mass of bloom and fragrance, for flowers do wonderfully well when really given a chance, there is an attractive little stretch of beach beyond the business centre, where the clean blue sea curls into long sparkling rolls and breaks into a dazzling whiteness as it boils over the low-lying moss-brown rocks which face the shore. To one coming unexpectedly upon this delightful stretch with the evil smells of the town still strong upon one, the effect is startling and decidedly pleasant. One is surprised to find that there is anything so absolutely clean and spotless about the place.

The ship unloads into lighters, and passengers go ashore in row boats, just as in the other ports, but the landing for passengers is much more simple here, for the "mole" is well protected in a tiny inner harbor. We discharge hay, machinery and cloth, while at the same time we load nitrates and crystals of iodine. The latter is so valuable it is locked up in the species room along with the bars of tin and silver. It is packed in little hundred-pound kegs no higher than a foot and completely sewed up in a rawhide jacket (with the hair turned inside) as a protection against moisture on its trip to England. Each keg is valued at about \$700 and makes one more valuable article to our already precious cargo of silver, tin, copper, antimony, hides and nitrates. The iodine comes as a by-product in the extraction of the sodium nitrates.

RESOURCES, RISKS AND REMUNERATION

BY G. W. LEE

"The trouble with the American Library Association is it hasn't brains." So exclaimed Mr. Dana at the recent Asbury Park Convention. It would have been also to the point had he accused it of lacking instinct and courage. The librarians had been pulling splendidly together for the exigencies of the war, and the question under discussion was how to maintain as good service in time of peace; and consequently whether an endowment fund would help the cause.

This Association has been in existence over forty years, and John Cotton Dana is one of several who feel that the day has long since arrived when it becomes the library fraternity to do what will generally be acknowledged a "big business." The natural resources which the libraries are capable of developing in their associate capacity are enormous, and it is only through such development that we may see for librarians what many men desire: larger salaries, salaries commensurate with what are received by the brain workers of big industries.

How, then, shall the libraries work to develop their joint resources? By various means, in which one factor is likely to be dominant, a factor which in normal times librarians, even more than most people, seem to shrink from — risk. To paraphrase a familiar quotation, some people can play safe all the time and win, all people can play safe some of the time and win, but not all can play safe all the time and win; and librarians are certainly in this third category. Why is it they are loath to take risk? Why does their pursuit have such "oslerizing" effect? They have ideas and they talk ideas; yet the majority would go to the extreme before expressing outward discontent with their modest salaries; and for the reason that they find their work so interesting, so filled with the sense and satisfaction of rendering service, and so free from having to think in terms of money. But, with the vast increase in the cost of living, even the otherwise most contented should feel the call for special effort to make possible a service that the community will consider worth a larger remuneration. Moreover, there is a growing minority that holdly expresses its unrest by unionizing and affiliating with the American Federation of Labor. Such unrest affords added reason why leaders

in library work should try to make it a well salaried profession rather than highly waged trade.

And has the writer a plan to suggest? Yes, but a plan that involves risk, though not the risk that so many fortune seekers have experienced in setting up in business for themselves. Call it rather the courage to follow instinct rather than to reason instinct away through dwelling on the chance of losing.

A word or two, therefore, as regards instinct. It is well pictured in a shoal of fishes or a swarm of bees or a flock of birds. It is felt by humans in team play, and in the big rail-roading, trading, manufacturing and financiering enterprises it is essential. Should we study the success of such undertakings we should find unity of action a vital factor. We should find it taken for granted that groups and individuals, even though geographically separated, are implicitly interdependent and have inherent confidence in advices furnished. By thus interacting, each brain worker of a large industry has a maximum of time and opportunity to take a *leading* part that will increase the growth of the industry and consequently the returns therefrom.

What library possibilities are analogous? Obviously, the possibilities of utilizing one another's facilities so as to avoid duplication of effort and thereby to gain time for more thoroughness in the development of immediate resources. At present the interdepending of geographically separate libraries is the exception rather than the rule, and is probably more prevalent with business libraries than with general libraries.

To illustrate definitely what the writer has in mind he would cite from an agreement to which he has recently committed himself. Some of us at Asbury Park felt the need for forming a group of engineering librarians. To bring this about we had the slight courage to avail ourselves of what might be called the development of the lobby. There was no place on the regular program for even discussing such a group; but we found it possible to have an "informal lobby" announced at the general sessions. These lobby sessions, for discussing matters not on the program, were in the large auditorium one-half hour in advance of the time scheduled for the general sessions. Thus at three or four informal gatherings (which, owing to customary delay in beginning the scheduled sessions, could last for more than the nominal half hour) an engineering group was talked over and formed, and by agreement the writer is

to prepare from the facilities readily available to him, sources of information on electric welding. Other members of the group will be expected to prepare sources of information on other subjects, but always on subjects that are within their facilities — by-products, as it were, of the day's work. Now multiply such co-operation by the number of topics which the thousands of libraries of the country might have apportioned to each as within their natural facilities and the tens of thousands of library workers as within their facilities in particular, and we have the picture of librarianship as a big industry.

Such apportionment should not mean mere bibliographical work. To make a list of books and periodical references on each topic apportioned would hardly satisfy the business world. On the subject of electric welding the writer would supply in addition to book and periodical references (which by the way should be annotated rather than lengthy) the names of specialists and of institutions fitted to give authoritative advice based on experience and study, some of which specialists he would see invited to take an interested part in making the list as satisfactory as practicable.

Still more to the point may be questions that are suggested by letters recently received, all in one mail, viz:

The Library of Congress makes inquiry by sending a slip of card-index size for

"Erskine, Thomas, of *Linlathen*.

The purpose of God in the creation of man.
Edinburgh, 1870. 8vo."

It adds

"If you know where a copy of the above is to be found please write the name of the library on this card and return it to the Division of Bibliography, Library of Congress, Washington, D. C."

The Emerson Institute of Efficiency sends a circular letter outlining the terms of its course on "making good."

The President of the Hillside School, Greenwich Village, Massachusetts, sends an appeal with a circular that describes by word and picture the education in farming which the school offers, listing also a directorate of prominent citizens of the Commonwealth.

The New England Moral Reform Society wants to raise \$16,000, and this with the endorsement of as good a list as the farming school.

It is not expected that the average library should be able to answer questions suggested by the above, which might be put as follows: Where can we locate the Erskine book? How efficient is the Emerson school graduate? How practical the farm school student? What is the relative importance of the Moral Reform Society as compared with a host of other charities one is invited to support? Nor is the average library expected even to put one satisfactorily on the way to getting these questions answered through reference to authorities. Therefore, we may say that one barrier that stands in the way of library advancement is the lack of expectation on the part of the public.

Consequently, the library industry, like many another, needs to create a demand for what it can offer, but to create this demand the library runs a risk: the risk of failure, the risk of being lonesome, the risk of losing time. But we need to begin by example; and it is the writer's hope and expectation that the venture of the engineering group will be paralleled by other groups, and that in the course of a year we shall find a spirit pervading the entire library fraternity that will insist on ours becoming an industry and a profession that is recognized as of first importance.

It is for the writer to have the courage of his convictions and soon to produce the list on electric welding. That list should then receive constructive criticism from far and wide, not only as to content but as to form and method adaptable for all topics: from archaeology to needlework; from the cost of living to trading with Brazil; from higher mathematics to the fiction announced for tomorrow. Thus, by developing channels of information, may librarians enlarge the expectations of the public and therefore the demand for a service that shall have no limit, either to satisfaction given or to reward received; even if many a time the satisfaction is but a sympathetic "no," and even if most of the time the reward is but a keener sense of having done something worth while.

BUSINESS CONDITIONS IN STONE & WEBSTER LOCALITIES

The managers of the companies operated by Stone & Webster write to the Management Division of Stone & Webster about the first of each month with reference to business conditions in their respective localities during the preceding month. A digest of these letters is published each month in the Stone & Webster Journal.

Baton Rouge, La., June 14th:

Building permits for May, 1919, were valued at \$53,063, against \$40,622 last year.

The average number of employees at the Standard Oil Company in May, 1919, was 2,606, against 2,175 last year.

General business conditions are still very favorable. Building permits were higher for the month of May than for any month since 1915.

The Aluminum Ore Company has leased a piece of land near the plant of the Standard Oil Company and business men are feeling very optimistic regarding future conditions.

The number of employees at the Standard Oil Company is the largest for any month in the history of the company here.

The railway, light and power, and the gas receipts of Baton Rouge Electric Company for May, 1919, all show very satisfactory increases over the previous year.

Beaumont and Port Arthur, Tex., June 13th:

Bank clearings at Beaumont for May, 1919, were \$5,618,439, against \$5,888,150 last year.

Bank clearings at Port Arthur for May, 1919, were \$1,336,215.

During May, 1919, 81 building permits were issued at Beaumont, valued at \$92,304, against 123 last year valued at \$186,732. At Port Arthur 19 building permits were issued, valued at \$65,093 against 16 last year, valued at \$18,529.

Exports in the Sabine District for May, 1919, were \$2,928,013 and imports were \$453,036.

The general business outlook for the immediate future is favorable in both Beaumont and Port Arthur. Very good retail business is reported and in the wholesale line buying is increasing in volume over the figures of the early part of the year. Business men are apparently becoming reconciled to the maintenance of the present high prices and are placing orders in larger quantities. Lumber, particularly, has risen in this market from 10% to 15% since the first of April, and a great deal of export business is being done at the higher prices. Considerable construction work is in progress and it is confidently predicted that this will continue throughout the year.

May was an unusually wet month, which had an adverse effect on crops.

The railway receipts of the Eastern Texas Electric Company for

May, 1919, show an increase of 24% over last year and the lighting receipts an increase of 15%.

During May the Hotel Committee succeeded in obtaining the required amount in subscriptions for the construction of a building to cost approximately \$800,000.

The deepening of the channel of the Neches River to a depth of 28 feet will proceed shortly, as the Magnolia Petroleum Company, which has interests along the river bank, has agreed to take the \$300,000 bond issue at par. This should result in increased business for the Port of Beaumont.

There has been a good deal of shipping at Beaumont during the past month, the greater part of which consisted of lumber cargoes for Europe, oil for various points, and general merchandise for Tampico, Mexico. At present shipping is restricted by facilities which are inadequate, but this condition is being remedied by the construction of additions to the municipal docks.

Bellingham, Wash., June 13th:

Building permits at Bellingham for May, 1919, were valued at \$41,810, against \$10,677 last year.

Post office receipts at Bellingham for May, 1919, were \$7,897, against \$8,026 last year.

General business conditions both in the city and the surrounding country continued good during the month of May. There is a very considerable improvement in the real estate market, several large pieces of business property as well as small home sites having changed hands.

Continued prosperity of the lumber industry, activity in building lines and favorable weather for road improvements will undoubtedly prolong the present payrolls.

The weather remains cold and the crops are somewhat behind their usual condition at this time of the year.

The receipts of our city lines showed an increase of 32% for May over the previous year. Passenger receipts on the interurban showed an increase of 14%, and freight receipts on the interurban showed an increase of 36%. Lighting receipts showed an increase of 13% on the Puget Sound Traction, Light & Power Company, and 16% on the Pacific Northwest Traction Company. Power receipts of the Puget Sound Traction, Light & Power Company showed an increase of 42%. The receipts of the gas department showed an increase of 24%.

Columbus, Ga., June 20th:

Bank clearings for May, 1919, were \$3,919,222, against \$2,446,346 last year.

During May, 1919, 15 building permits were issued, valued at \$47,240, against one last year, valued at \$750.

Post office receipts for May, 1919, were \$11,119, against \$8,600 last year.

Merchants report that retail business is well on the increase, and a feeling of optimism exists on every side. Home building is speeding up as fast as labor conditions permit. The demand for houses is far in excess of the amount of new construction now underway.

The mills are well supplied with orders, but do not find it advisable to do any night overtime running, as experience has demonstrated that night operation is unsatisfactory in every way.

As regards Fort Benning, the general belief is that the work is so far along towards completion that Congress will not find it desirable to stop construction and thereby lose several million dollars.

The railway receipts of the Columbus Railroad Company for May, 1919, show a handsome increase over last year, and a very satisfactory gain is also recorded in the light and power receipts. The same may be said of the receipts of the Gas Light Company of Columbus.

El Paso, Tex., June 4th:

Bank clearings for May, 1919, were \$27,557,229, against \$17,573,436 last year.

During May, 1919, 110 building permits were issued, valued at \$159,080, against 165 last year, valued at \$73,500.

Exports for April, 1919, were \$554,969, against \$375,549 last year.

Imports for April, 1919, were \$398,223, against \$151,070 last year.

The bank clearings established a new record, being double the 1916 figures and about 60% higher than the 1917 and 1918 figures.

General business is gradually resuming, and with travel between El Paso and Mexico much freer during the past month, this city will soon be normal again.

The Rio Grande Oil Company has just completed a new refining plant with a capacity of 50,000 gallons of crude oil a day, at a cost of over \$100,000. Distributing plants in half a dozen nearby towns, either completed or with contracts let, complete the distribution system.

Plans are now being drawn for a big industrial plant to put El Paso on the map as an oil refining centre. The plant will have a daily capacity of 5,000 barrels, and will cost \$1,000,000. It is the El Paso Petroleum Company, which will be capitalized at \$1,000,000. The plan is to place \$200,000 worth of stock in El Paso and \$50,000 each in Arizona and New Mexico.

Building of homes is going forward, and there is a crying need for dwellings. The opinion is unanimous that a season of unprecedented activity is not very remote. The Methodists are to enlarge the Lydia Patterson Institute here, spending \$185,000 on an industrial annex. The Standard Grocery Company's \$75,000 wholesale house will be started this month.

The railway receipts of the El Paso Electric Company for May, 1919, show a gain of 35.44% over last year.

The light and power department made a very good gain during the month in meters and customers.

Everett, Wash., June 20th:

Bank deposits of Everett were in May the highest in the history of the city.

During May, 1919, 93 building permits were issued, valued at \$66,160, against 47 last year, valued at \$14,611. It is reported that 27 of these permits were for residences.

Prices in the lumber and shingle industry have advanced twice

within the last two weeks, and are now higher than they have ever been before.

Fall River, Mass., June 5th:

Bank clearings for May, 1919, were \$11,336,096, against \$11,540,078 last year.

During May, 1919, 59 building permits were issued, against 55 last year.

The cotton mills have been doing a favorable business the past month, with prices advancing sharply, and with large sales both of spots and for future delivery.

Fort Madison, Iowa, June 7th:

Bank clearings for May, 1919, were \$3,544,254, against \$2,046,526 last year.

Fort Madison's prospects are extremely bright, as houses are being erected in all parts of the city. A Kansas City firm, through local agents, recently purchased a block of twenty-seven lots on which houses will be built immediately. Other real estate concerns are considering extensive building operations, while local contractors are busy on houses for local people.

A real estate company has recently platted a large section in the west end of the city and has conducted a sale through which it disposed of approximately fifty lots.

The weather for the past month has been decidedly bad, and all of the spring crops are menaced, with the exception of the strawberry crop, which should be unusually heavy with good weather during June.

Fort Worth, Tex., June 3rd:

Bank clearings for May, 1919, were \$66,147,616, against \$50,836,191 last year.

During May, 1919, 218 building permits were issued, valued at \$506,885, against 69 last year, valued at \$605,979.

Stockyard receipts during May, 1919, were:

	1919	1918
Cattle	107,436	104,333
Calves	8,417	12,737
Hogs	37,440	39,392
Sheep	107,621	57,715
Horses and Mules	1,929	1,586

The fact that while the number of building permits issued in May, 1919, was very much larger than last year, and the valuation considerably smaller, is accounted for by the fact that in 1918 permits for four school buildings and a city filtration plant were taken out at a valuation of \$364,000.

The general business outlook for the immediate future is very promising. An unusually large grain crop is ready to be harvested, and unless the efforts to secure sufficient farm hands fail the farmers in West Texas will have one of the best seasons on record. Range conditions are exceedingly good, and the oil situation continues to be of prime importance.

The steady inflow of people and their prosperity have caused passenger receipts of the Northern Texas Traction Company to show a very favorable increase for the month. The receipts of the Fort Worth Division for May, 1919, were 1.9% above last year, and those of the Interurban Division, 10.2%.

The Government has definitely decided to abandon Barron, Caruthers and Taliaferro Fields and also Camp Bowie. The latter, with the exception of hospital buildings and certain storehouses, has been sold and will be removed in the near future. It is now understood, however, that the sewer and water pipes, which were laid by the Government, will remain in place, and will consequently enhance the value of this property for building purposes.

Business conditions in Cleburne are good.

Galveston, Tex., June 6th:

Bank clearings for May, 1919, were \$24,044,220, against \$15,094,359 last year.

The volume of business in May, 1919, was \$99,427,000, against \$82,535,000 last year.

During May, 1919, 553 building permits were issued, valued at \$43,295, against 431 last year, valued at \$18,235.

Post office receipts for May, 1919, were \$19,004, against \$18,232 last year.

May was a busy convention month, five important conventions having convened in the city.

The confidence felt in the future prosperity of Galveston is indicated by the number of new enterprises being established here.

Cotton exports for May, 1919, amounted to 165,823 bales, valued at \$50,907,661; wheat exports amounted to 497,100 bushels, valued at \$1,138,388.

Local real estate dealers report unusual activity. They claim that the prospects for an active business in all lines, especially in homes and furnished houses, are brighter than they have been since 1915.

The railway receipts of the Galveston Electric Company for May, 1919, show an increase of 21.1% over last year and the lighting receipts an increase of approximately 100%.

Haverhill, Mass., June 10th:

Savings bank deposits on May 31st were \$14,812,503, against \$13,849,401 last year.

During May, 1919, 26 building permits were issued, valued at \$266,850, against 9 last year, valued at \$4,675.

General business conditions are unchanged.

Houghton, Mich., June 10th:

While large numbers of workmen continued to leave this district during May for the larger industrial centres, the opinion is general that from now on conditions may be expected to improve. This optimism is largely the result of the improvement in the copper market. It is believed that the price of copper will reach 20c by the end of this year. While 20c

copper will not allow several of the smaller mines which have closed down to reopen at profit, the output of the larger producers may be expected to increase with the increase in price. Copper Range, Quincy Mining, Mohawk and Wolverine continue to operate as near their normal capacity as is possible with the supply of labor available. By the end of May the surplus of copper in this district had been reduced to 30,000,000 pounds which figure, however, does not include any surplus which local companies may have on hand at eastern points.

In general the business outlook for the remainder of the year is somewhat brighter than it was a month ago.

Houston, Texas, June 9th:

Bank clearings for May, 1919, were \$74,676,761, against \$54,256,613 last year.

During May, 1919, 329 building permits were issued, valued at \$571,047, against 210 last year, valued at \$182,587.

Real estate transfers for May, 1919, were \$1,560,597, against \$1,559,041 last year.

That Houston is in the midst of the greatest building activity in its history is evidenced on every side. The most interesting feature of the building now underway is that the greater portion of the construction represented by the building permits recorded above covers residences and apartment houses. At no time in the city's history has the demand been so great for dwellings. It is not unlikely that this building boom will continue for some time to come. The demand for office space has outgrown the supply. It is reported that all of the office buildings are fully occupied and that there is a large waiting list. While the erection of no new large office building is assured, with the exception of the twenty-two story building at Texas and Main, it is reported that several more large office structures are contemplated for the immediate future.

General business conditions in Houston during May continued to show substantial gains in nearly all lines. Retail merchants report that their spring sales continue very brisk, and wholesale merchants state that the demand for all commodities is very steady.

Cotton liquidations were very heavy during May, especially during the last part of the month when the peak price was reached. Sales continue heavy even though the price has been forced down to some extent by the large quantity of cotton that has been placed on the market.

Bankers report that their deposits are showing heavy increases and that they expect this condition to continue during the month of June.

The live stock in this district is reported to be in excellent condition and heavy sales are reported, particularly of cattle.

The weather during May was very rainy, and as a result the farmers report that their crops are not in the best condition. The wet weather has also held back the planting of some crops, such as potatoes, rice and late corn.

A situation which is causing no little concern to the farmers is the shortage of labor. This situation is not confined to the Gulf Coast section, but seems to be general throughout the state. The commercial organizations are exercising their influence to secure relief, and some modifications

in the immigration laws are being sought by which Mexican labor may be imported.

It is reported that the oil refinery which is located on the Houston Ship Channel will, by July 1, 1919, be turning out more than 20,000 barrels of refined product every twenty-four hours.

The receipts of the Houston Electric Company for May, 1919, show an increase of 16.7% over last year and those of the Galveston-Houston Electric Railway Company, an increase of 16.9%.

Keokuk, Iowa, June 12th:

Retail merchants report business during May as showing a large improvement over last year in every line, while the outlook for continued increase is very favorable. There seems to be more money in circulation than in the past.

Bankers report savings accounts as showing exceedingly large increases over last year, one bank as high as 50%.

On May 11th the Gas Tank Recharging Company made its first batch of carbide of calcium, and from now on its huge electric furnaces will run night and day indefinitely. The capacity of the plant is now twenty tons a day, and this can be easily doubled without additional construction.

The stockholders of the Purity Oats Company of Keokuk and Davenport held final meetings confirming the consolidation with the American Hominy Company. The capacity of the oats plant at Keokuk and Davenport will be increased as rapidly as possible to meet the requirements of the trade. The consolidation will have an issue of \$3,000,000 of common stock, fully paid up, with assets of about \$9,000,000.

Contracts were signed on May 19th for the erection of the big addition to the Standard Four Tire building.

The big plant of the Fluid Compressed Steel Company is going up very rapidly. The date originally set for beginning operation was October 1st, and it is now believed that the centrifugal furnace will be going by August 1st.

The railway, electric light and power, and gas receipts of the Keokuk Electric Company for May, 1919, will show substantial increases over the previous year.

Key West, Fla., June 7th:

Customs receipts for May, 1919, were \$120,134, against \$114,513 last year.

The cigar output for May, 1919, was 6,760,050, against 7,651,730 last year.

The general business outlook for the immediate future is very favorable. There is an unusual amount of building going on at the present time, and it is the opinion of the cigar manufacturers that all the factories will be working larger forces, if not to their full capacity, within the next few days.

Both the railway and lighting receipts of The Key West Electric Company for May, 1919, show a good increase over last year. The good showing in lighting earnings is due largely to new business in the resi-

dential district during the last few months, in the face of a noticeable decrease in consumption by Government departments.

Lowell, Mass., June 16th:

Bank clearings for May, 1919, were \$4,746,993, against \$5,487,606 last year.

During May, 1919, 129 building permits were issued, valued at \$156,580, against 87 last year, valued at \$55,575.

General business conditions have not changed materially since a month ago. The unemployed are gradually securing work, and most of the returned soldiers and sailors appear to be placed in some line of business.

The income of The Lowell Electric Light Corporation from lighting and power continued during May to show a gain over the previous year.

Paducah, Ky., June 5th:

Bank clearings for May, 1919, were \$9,408,595, against \$8,833,678 last year.

Despite inclement weather the past month, business conditions in Paducah were very good. There were three conventions here. The extremely wet weather is very unfavorable for preparing land for this year's planting and the farmers are considerably discouraged; the weather is retarding their work to a marked degree. Throughout the month there was a steady tobacco movement considering the small per cent of last year's crop still in the hands of the farmers. It is estimated that approximately 40% of this year's crop has been planted under unfavorable weather conditions. Unless we soon have favorable weather for working the ground the acreage planted this year will be materially cut down and the 1919 crop decreased below that of average years.

In the retail trade there is an ever-increasing demand for goods of superior quality, and merchants are buying heavier in the Eastern market than heretofore. The prevailing high prices do not seem to be a deterrent, as the higher they go the greater seems to be the amount of trade done. The farmers are buying liberally, and their prosperity is indicated by activity for goods which may be termed luxuries.

There is considerable building in progress. The Illinois Central Railroad Hospital is rapidly nearing completion. Contractors and builders are very busy. The International Shoe Company is proceeding rapidly with the work of turning the Friedman-Keiler building into a shoe factory, and the company expects to be making shoes before the end of June.

The receipts of the Railway Company for May, 1919, show an increase over last year, and the light and power receipts continue to show satisfactory increases.

Pawtucket, R. I., June 9th:

The banks report a decrease of 4% in commercial accounts in May, 1919, and an increase of 14% in savings accounts.

Post office receipts for May, 1919, were \$17,090, against \$19,067 last year.

During May, 1919, 27 building permits were issued, valued at \$144,-820.

General business conditions improved greatly during the month of May and the manufacturers' chief difficulty is in securing sufficient skilled labor promptly to fill orders on hand.

Every line of industry in this section is very busy, the manufacturers of industrial machinery being the last to report a marked change for the better in the demand for their goods.

Merchants report heavy buying and a demand for the best. The building trade reports a slight improvement.

Pensacola, Fla., June 14th:

During May, 1919, 133 building permits were issued, valued at \$33,803, against 117 last year, valued at \$40,131.

Several cargoes of coal were exported from this port during the month of May to Cuba, and some timber was shipped to foreign countries. The high prices prevailing for naval stores is causing quite a little work in this line and there is some export movement.

The Texas Oil Company began the erection in May of storage tanks and docks for its Marine Oil terminals.

On May 24th, the second steel ship built in Pensacola was launched at the Pensacola Shipbuilding Company's plant on Bayou Chico. Another steel ship will be launched during June.

Both the railway and the lighting receipts of the Pensacola Electric Company for May, 1919, show increase over last year.

Ponce, Porto Rico, June 24th:

During May, 1919, 2 building permits were issued, against 2 last year.

Post office receipts for May, 1919, were \$3,777, against \$3,268 last year.

Business conditions during May were about normal.

Reno, Nevada, June 19th:

Bank clearings for May, 1919, were \$3,409,481, against \$2,426,882 last year. For the first five months of 1919 they were \$14,490,692, against \$11,704,503 last year.

During May, 1919, 12 building permits were issued, valued at \$20,080, against 9 last year, valued at \$14,350. The May permits this year included 4 new residences.

Post office receipts for May, 1919, were \$11,523, against \$8,803 last year.

The first crop of alfalfa is now being cut and shows good condition. Although several frosts were experienced during May, very little damage to either crops or fruits was noticed.

A movement is underway looking towards the consolidation of the three large copper companies in the Yerington District. At present experts are appraising the three properties. Nothing is known as yet as to probabilities, but in any event no activity can be expected from this district until late in the autumn.

The Marysville Dredging Company, a large California gold dredging outfit, has recently investigated a dredging proposition near our company's transmission system at Dayton. A favorable finding is indicated by the fact that the first payment has been made to option the land.

It is planned to erect near Minden an alfalfa meal plant requiring 100 H.P.

Our company has started construction on a six mile extension to supply power to the Standard Metals Company, a mine located north of Reno.

The remodeled and enlarged mill of the Como Consolidated Mines Company is now operating at capacity.

There is some possibility of the Metals Recovery Corporation and the Rockland Mining Company starting operations again during 1919.

Savannah, Ga., June 9th:

Bank clearings for May, 1919, were \$36,640,552, against \$26,760,799 last year.

During May, 1919, 56 building permits were issued, against 18 last year.

Cotton receipts for May, 1919, were 65,255 bales, against 45,747 bales last year.

Turpentine receipts for May, 1919, were 5,402 barrels, against 4,127 barrels last year.

Rosin receipts for May, 1919, were 13,123 barrels against 14,653 last year.

The general business outlook for the immediate future is good.

The railway receipts of the Savannah Electric Company for May, 1919, show a most satisfactory increase over last year.

In the lighting department commercial power receipts show an especially satisfactory increase.

Seattle, Wash., June 10th:

Bank clearings for May, 1919, were \$158,106,568, against \$147,520,412 last year, \$90,744,998 in 1917 and \$63,544,464 in 1916.

Building permits for May, 1919, were valued at \$1,442,605, against \$863,760 last year.

Real estate transfers for May, 1919, were \$3,014,762, against \$2,162,719 last year.

The shipyards since the strike have been going ahead full-time speed, and in May set a new record; 19 steamships, aggregating 159,800 dead-weight tons were delivered by the Northern Pacific District to the United States Shipping Board during May. The high record for one month was last June when 14 vessels of 112,300 tons were delivered.

The fir market is now so strong, backed by orders ahead for all mills in operation, that new prices will be instituted soon. Quotations of today generally mean a loss or an even break for the mills that must go on the market for their logs, but the mills with the stumpage bought several years ago are able to cut and ship at a profit on the logs alone. Several of the larger and older mills are doing this. There is now no expectation of reducing the overhead operating costs.

Construction projects contemplated for this city in the near future will total close to \$10,000,000 in valuation. During the last ten days in May seven apartment houses were projected, the first since our entering the war. The value of the building permits to date about doubles the record of the first five months of last year.

Sydney, N. S., June 25th:

During May, 1919, 55 building permits were issued, valued at \$139,454, against 55 last year, valued at \$55,667.

Customs receipts for May, 1919, were \$34,753, against \$88,175 last year.

The output of the Dominion Coal Company for May, 1919, was 244,718 tons, against 297,740 tons last year. The shipments were 221,854 tons, against 232,477 tons last year.

The report of the city building inspector for May states that the number and value of building permits issued during the month is the largest ever known in the history of this city. It is claimed that this is chiefly due to the fact that the landlords, on account of the shortage of residences, have raised rents to an exorbitant figure, and that as a result people are putting their money into homes rather than pay such high rental.

Mining at the colliery of both the coal companies is more or less spasmodic, there not being enough orders booked ahead to warrant production on a very extensive scale. Both companies have been operating on an average of about half their capacity. The Dominion Coal Company has, however, suspended its coal shipping from the port of Louisburg, and is now shipping all of its coal from Sydney. This is due to economic conditions, it being stated that the time to transport coal to Louisburg is twice that of Sydney, and that the cost of transportation to Louisburg is very much higher.

Beginning the first of June all the stores and a large number of offices are closing down on Wednesday afternoon at one o'clock.

It is rumored here that the Dominion Iron & Steel Company and the Steel Company of Canada will merge. In this event, the rumor states that the plant of the Steel Company of Canada will probably be used for local purposes, while the plant at Sydney will be used to develop export trade.

It is expected that on the first of July the furnaces of the Nova Scotia Steel & Coal Company, Ltd., at Sydney Mines, will be shut down for an indefinite period. During this time repairs will be made. It is interesting to note that the blast furnace has been running continuously since the beginning of the war.

The receipts of all the departments of our company for the month of May were very gratifying, there being a marked increase over the same month last year, and over the month of April this year.

Tacoma, Wash., June 7th:

Bank clearings for the first five months of 1919 were \$93,054,533, against \$88,592,176 last year, \$55,848,889 in 1917 and \$44,407,964 in 1916.

During the first five months of 1919, 1,633 building permits were issued, valued at \$990,022, against 974 last year, valued at \$1,326,791.

Real estate transfers for the first five months of 1919 were \$1,787,048, against \$1,706,540 last year.

According to figures of the Tacoma Clearing House Association the total volume of business in Tacoma for the first five months of this year was more than 50% greater than for the same period in 1918.

The port bonds, voted on in the latter part of May and carrying \$2,500,000 for the development of the Port of Tacoma, carried by the narrow margin of 274 votes. Two hundred forty acres of the land will immediately be condemned and work on docks and warehouses will be begun at the earliest practicable date.

The road bond issue also carried and the Pierce County's road building program will begin at once. \$1,000,000 of the \$2,500,000 road bond issue have been sold. The first paving will be on the road from Tacoma to Mount Rainier International Park and bids will be called for immediately.

The success of the New Alexander Hotel is now assured. The former plan of erecting the hotel on the site of the Tacoma Hotel has been abandoned and a more central site has been selected. The hotel is to cost \$1,500,000 and will be operated by interests which lease the biggest hotels on the Pacific Coast.

The "Oelwein," launched by the Seaborn Shipyards is the last of the wooden vessels put out in Tacoma. She is one of the 3,500-ton Ferris type steamers cut down to a barge, and the fourteenth vessel this company has constructed for the Government. In all since the yard has been located at Tacoma, nineteen vessels have been built. With the launching of the barge, work at the Seaborn Yard at Tacoma is closed. Just how much money has been expended in wooden shipbuilding at Tacoma is problematical. The Government is now selling the completed ships at approximately \$650,000 each.

The total number of vessels turned out at Tacoma since the beginning of the war emergency was sixty-five; the Foundation Yard built twenty auxiliary schooners at an expenditure of between \$12,000,000 and \$13,000,000; the Tacoma Shipbuilding Company turned out eight vessels; the Wright Yard six steamers and a barge, and Barbare Brothers, three vessels and a barge.

Tampa, Fla., June 13th:

Bank clearings for May, 1919, were \$8,885,905, against \$6,695,134 last year.

Building permits for May, 1919, were valued at \$90,000, against \$50,015 last year.

Post office receipts for May, 1919, were \$41,154, against \$23,727 last year.

Customs receipts for May, 1919, were \$72,018, against \$72,556 last year.

Internal revenue receipts for May, 1919, were \$292,214, against \$56,541 last year.

Cigar manufactures for May, 1919, were 35,983,500 cigars, against 10,873,000 last year.

The railway receipts of Tampa Electric Company for May, 1919, show an increase of 27% over last year and the light and power receipts an increase of 21%.

Woonsocket, R. I., June 14th:

During May, 1919, 70 building permits were issued, valued at \$338,860, against 11 last year, valued at \$23,500.

General business conditions are excellent. Merchants report business conditions normal and the textile situation is improving all the time.

News from the Companies

Boston Office

Mr. Russell Robb is on his vacation.

Mr. L. H. G. Bouscaren and Mr. M. J. Whitson have gone to France.

Mr. G. H. Clifford, local manager of the Northern Texas Traction Company, has lately visited the Boston office.

Mr. A. S. Pratt has spent considerable time in Halifax, Nova Scotia, recently.

Mr. Samuel B. Tuell of Hog Island visited the Boston office recently.

Mr. C. F. W. Wetterer, division manager for the Southeastern District, has returned from a month's trip in the South.

Mr. C. A. Sears, general superintendent of the Mississippi Power Company, visited the Boston office recently.

Mr. Milliken, local manager at Houghton, Michigan, was lately in Boston.

Mr. J. T. G. Nichols is on an extended vacation, which he is spending at Rockport, Mass.

Mr. H. H. Hunt is spending the summer at Duxbury, Mass.

Mr. M. M. Phinney has returned to the office after an extended vacation.

Mr. H. A. Lemmon of Reno has been in Boston.

Mr. Louis H. Bean, local manager at Tacoma, spent a few hours in Boston in June.

Mr. J. P. Ingle, local manager of the Keokuk Electric Company, was here for a brief period.

Mr. John W. Gale of the statistics department is in New York.

Mr. Eben O. Smith of the statistics department has been transferred to the Cape Breton Electric Company, Sydney, Nova Scotia.

Mr. Willard B. Newell of the statistics department has been transferred to the Key West Electric Company.

Mr. Frank A. Tracy, University of Maine, 1919, has joined the statistics department.

Mr. L. C. Bradley, division manager for the Texas companies, recently spent a short time here.

Mr. K. M. Causland, local manager of the Lake Ariguinabo Company, Santiago de Cuba, has been at the Boston office recently.

Mr. E. Stanley Glines, formerly head of the Stone & Webster Drafting Department and later at Hog Island, has identified himself with Lam, Glines & Company, Inc., a corporation organized to promote American interests in China. Mr. George C. England and Mr. Frederick S. Pratt are also directors of this company.

The Chinese interests in this development are represented by Loy Chang, a graduate of Harvard University and later connected with leading banking institutions in the United States; T. K. Kao, a graduate of Massachusetts Institute of Technology, later connected with the American Rolling Mill Company of Middletown, Ohio, American Whaley Engine Company of Boston, and still later a representative of the Ameri-

can Rolling Mill Company in China; V. Fang Lam, a graduate of Massachusetts Institute of Technology, and successively with the Fore River Shipbuilding Company, the New London Ship & Engine Company and the New York Shipbuilding Corporation; Long Lau, a graduate of Massachusetts Institute of Technology, at one time assistant to Prof. R. A. Richards at the Institute, later chemist of the Juragua Iron Company of Santiago de Cuba, then chief engineer of the mine, subsequently chief engineer and acting superintendent, and in 1919 mine engineer of the Yang Iron Works, of China; K. C. Tsang, graduate of Cornell University and connected with the American Locomotive Works; H. F. Wang, graduate of Peking University and Columbia School of Mines, with experience with various American mining organizations; K. Huang, a graduate of Yale, with experience as accountant and auditor in the United States.

It is interesting to note that Mr. Fang Lam is a nephew of Wu Ting Fang, formerly Chinese Ambassador to the United States, and that Mr. H. F. Wang is a nephew of Mr. E. T. Wang, one of the Chinese representatives at the Peace Conference.

Mr. H. C. Foss, district manager of the Southeastern District, announced the birth of a daughter June 26th.

Mr. R. M. Harding, heretofore holding the position of general superintendent of The Columbus Power Company, Columbus Railroad Company and Gas Light Company of Columbus, has been appointed local manager.

Mr. John J. Madden of Securities Department, 101st Infantry, has been recommended for the Croix de Guerre.

Mr. Howard F. Neill returned to the treasurer's office after overseas duty in the Artillery branch of the service, with the Rainbow Division.

Miss Mabelle R. Bratton has entered the stenographic department of the treasurer's office, having returned from Washington, where she was a secretary in the Food Administration.

Mr. B. Alcott Pratt has returned to the treasurer's office after overseas duty with the army.

Mr. James B. Mahoney has returned to the treasurer's office after overseas duty in the Ordnance branch of the army.

Miss Margaret McKendrick has left the organization and returned to her home in Scotland.

Mr. A. Homer Hathaway has been transferred from the treasurer's to the securities department.

The Great Western Power Company of San Francisco has placed a contract with Stone & Webster for the construction of a hydro-electric power plant of 40,000 k.w. capacity near Caibour.

The Whitman & Barnes Manufacturing Company has placed a contract with Stone & Webster for the construction of additions to their plant at West Pullman, Illinois.

Stone & Webster have been engaged to construct a laboratory building and a faculty building for St. Xavier College, Cincinnati, Ohio.

Stone & Webster have been asked to construct a building at London, Ontario, for the Holeproof Hosiery Company.

Stone & Webster have undertaken the installation of boilers for the New Bedford Gas & Edison Light Company, New Bedford, Mass.

The following is a list of those who left the Boston office for service in connection with the war, and who, being honorably discharged, have returned to the Stone & Webster organization:

Walter W. Avery	....Sgt., Medical Corps, 11th U. S. Machine Gun Batt., A. E. F.	Industrial
Gordon H. Balch	....1st Lt., U. S. Naval Reserve Forces, Flying Corps	Securities
Robert J. Barrett	....U. S. Naval Reserve Force, Hingham	Accounting
Mabelle R. Bratton	...U. S. Food Administration, Washington, D. C.	Secretary
William W. Brigham	...Ensign, U. S. Naval Reserve Force, Miami, Fla.	Drafting
George A. Cahill, Jr.	...Lt., Jr. Grade, U. S. Naval Aviation, Washington, D. C.	Purchasing
Francis C. Carleton	...1st Lt., Instructor Officers' Camp, Camp Taylor	Treasurer's
George D. Carpenter	...Medical Corps, U. S. Base Hospital No. 66	Drafting
Carroll H. Carter	....1102 Aero Replac. Sqdu. American P. O. 725	Drafting
Clarence E. Conkey	...U. S. Naval Reserve Force, Storekeeper, Charlestown	Purchasing
William T. Crawford	...1st Lt., 301st U. S. Infantry, A. E. F.	Corporation
Charles P. Crowley	...Naval Detail, Commonwealth Pier	Drafting
Joseph G. Crowley	...Coast Artillery Corps, A. E. F.	Messenger
David Day	....101st U. S. Artillery, 26th Division, A. E. F.	Eng. Acctg.
Edwin W. Deering	....Depot Brigade, Camp Devens	Drafting
Martin J. Dempsey	...Battery F, 117th Field Artillery, A. E. F.	Messenger
Thomas J. Dickson	...Headquarters Co. 302 Field Artillery, A. E. F.	Drafting
John W. Dineen	....Sgt., Co. E, 104th U. S. Infantry, A. E. F.	Purchasing
George V. Donovan	...U. S. Naval Reserve Force, Charlestown Navy Yard	Construction
Walter M. Driscoll	...Sgt., Medical Corps, U. S. Field Hospital, A. E. F.	Drafting
Joseph J. Droulette	...U. S. Hospital Corps, Newport, R. I.	Construction
William J. Farrisee	...Air Service School, Austin, Texas	Drafting
Thomas W. Fernald	...2nd Lt., Camp Lee, Petersburg, Va.	Auditing
Joseph P. Fish	....Marine Reserve Corps, Navy Yard, Philadelphia	Engineering

John Di Giacomo.....Students' Army Tr. Corps,
 Harvard University Auditing
 Earl R. FontaineStudents' Army Tr. Corps,
 Boston College Purchasing
 Lester H. Fontaine ...Students' Army Tr. Corps,
 Boston College..... Stockroom
 Daniel S. FuryStudents' Army Tr. Corps,
 Boston College..... Accounting
 C. Elmer Gane Battery B, 6th Artillery, C. A. C.,
 A. E. F. Drafting
 Federico Glenton, Jr. .Capt., Engineering Corps, Camp
 Humphreys, Va. Purchasing
 Melville W. Grant ...33rd Co., Central Officers' Tr.
 School, Camp Lee, Va. Auditing
 John T. Griffin Corp. Utilities Detachment, Con-
 struction Division Construction
 Stephen W. Herthel ..Signal Corps, Aviation Service,
 2nd Train Brigade, Kelly
 Field Drafting
 Clarence L. HoytSgt., Labor Batt., Quarter-
 master's Corps, Camp Stuart,
 Va..... Accounting
 Charles A. Hunter ...Master Gunner, C. A. C..... Drafting
 Mathew G. Kelly..... U. S. Base Hospital Unit No. 5 Auditing
 J. Philip Lane.....2nd Lt., 101st U. S. Machine
 Gun Co., A. E. F. Securities
 Meredith W. Littlefield Harvard Radio School, Cam-
 bridge, Mass..... Engineering
 John J. Madden.....Sgt. Major, 101st U. S. Infantry,
 A. E. F. Messenger
 James B. Mahoney...Capt. Ordnance Dept., A. E. F. Treasurer's
 Elliott E. McDowell...2nd Lt. 35th Infantry..... Drafting
 Johnston L. McLeod..Lt., Jr. Grade, Naval Aviation.. Purchasing
 Mayland H. Morse ...U. S. Naval Reserve Force,
 Naval Aviation Corporation
 Howard F. Neill.....Lt. Battery C, 314 Fieldartil-
 lery, A. E. F..... Treasurer's
 Willard B. Newell ...2nd Lt., Headquarters Co., 129th
 U. S. Infantry, A. E. F..... Statistical
 Raymond PowellStudents' Army Tr. Corps,
 Boston College Construction
 B. Alcott Pratt.....Capt., 102nd U. S. Fieldartil-
 lery, A. E. F..... Treasurer's
 Harold E. Putnam....Corp., 101st Engineers, A. E. F. Drafting
 Charles W. Shannon .102nd Machine Gun, A. E. F... Drafting
 Edmund J. SheaStudents' Army Tr. Corps,
 Boston College Construction
 Charles Warren Smith Sgt., 156 Depot Brigade, Camp
 Sevier, S. C..... Transfer
 Eben Oswell Smith....Ensign, U. S. Naval Reserve
 Force, U. S. S. "Moccasin" .. Statistical

Lucius Smith	.....Co. A, 1st Batt., Edgewood Arsenal, Md.	Advertising
Harvey E. Snow	.....U. S. Naval Reserve Force ...	Drafting
Chester B. Starbird	..Capt., 317th Engineers, A. E. F.	Drafting
Edward S. Steinbach	..2nd Lt., Gas Officers, U. S. Engineers, Camp Shelby, Miss.	Engineering
James A. Sullivan	....Sgt., F. A. C. O. T. C., Camp Taylor, Ky.	Statistical
Theodore L. Tewksbury	Major, Instructor, School of Flame, Fort Sill, Okla.	Purchasing
A. J. Tobin	.....Students' Army Tr. Corps, Boston College	Messenger
Hubert W. Tracy	....Aviation Corps, Garden City, L. I.	Engineering
Frank B. Turner	....3rd Engineers' Training Regt., Camp Humphreys, Va.	Messenger
John M. Turner	....Camp Jackson, S. C.	Drafting
John W. Turner	....2nd Lt., U. S. Aviation, A. E. F.	Statistical
Edward E. Webster	..2nd Lt., U. S. Naval Aviation, Signal Corps.	Purchasing
George J. Wentworth	. U. S. Naval Reserve Force, 2nd Class Seaman, Bumkin Island	Engineering
Earl L. Wheeler	.....U. S. Naval Reserve Force ...	Purchasing
George B. Wilson	....Recruiting Detachment, 23rd Co., Engineers.....	Drafting

Baton Rouge, La.

Mr. I. M. Stover, manager for the past two and one-half years, has been transferred to the Boston office. With his family he is spending a month's vacation at Baring, Maine, before assuming his new duties. Mr. Stover was presented with a handsome silver water pitcher and tray by the employees of the Baton Rouge Electric Company upon his departure.

Mr. Geo. H. Wygant, formerly commercial agent of the Tampa Electric Company, has been appointed as manager to succeed Mr. I. M. Stover.

Mr. H. R. Sharpless, for the past two and one-half years chief engineer of the Power Station, has been transferred to Pensacola, Fla., as chief engineer for the Pensacola Electric Company.

Mr. W. G. Gay, formerly with the Blackstone Valley Gas and Electric Company, has succeeded Mr. Sharpless as chief engineer.

Mr. C. F. W. Wetterer paid us a visit of several days in June.

Mr. and Mrs. E. P. Williams have returned from a two weeks' vacation spent in Corpus Christi, Texas. Mr. Williams visited some of the Texas companies before returning.

Mr. M. B. Marshall of the power station has been transferred to the Pensacola Electric Company. Mr. Marshall was recently discharged from the Army after several months' service overseas.

The Aluminum Ore Company of America has purchased 227 acres of land just north of the Standard Oil plant as the site of a large smelting plant.

A \$450,000 bond issue was favorably voted upon by the property holders of this parish for the erection of a new court house.

The organization of an Advertising Club to be affiliated with the National Advertising Association has practically been completed. Mr. Wygant, our manager, is a member of the organization committee.

The Federal Government has donated eight army trucks to the parish for good roads work.

Work is progressing rapidly on the new Community Club Park and the swimming pool is nearing completion.

Beaumont and Port Arthur, Texas

Captain Jas. F. McLaughlin has gone to Houston as secretary to Mr. L. C. Bradley.

Mr. W. I. Sturtevant, superintendent of lighting, Beaumont, and Mr. Jos. Bowes, Jr., superintendent of lighting, Port Arthur, have returned from Atlantic City, where they attended the National Electric Light Association. They visited several other points in the East while away.

Miss Wilma Burnette, who has been with the commercial department of the Beaumont Division for the past six years, was married on June 4th to Mr. H. J. LeBlanc. Mr. and Mrs. LeBlanc spent their honeymoon in the mountains of Colorado, and at Denver, Colorado Springs and other interesting points. The employees of the Eastern Texas Electric Company presented them with a beautiful electric coffee urn set. Mrs. LeBlanc retains her position with the company.

Mr. and Mrs. H. E. Braunig announce the birth of a son on June 4th. The boy has been named Hubert Edwin, Jr.

Mr. Floyd Mings, formerly with the Galveston Electric Company, later of the U. S. Army, has accepted a position with the Beaumont Organization in the accounting department.

Track work in the city of Beaumont, which has been under construction for some time, has been practically completed and 5-minute rush hour service inaugurated on the Calder-College and Park lines. Beaumont now has excellent street car service and patrons seem highly pleased with the marked improvement.

During the month of June we completed the furnishing of an assembly room for our trainmen. This room has a seating capacity of one hundred and occupies the space over the offices at the car barn. The first trainmen's meetings were held in this room June 23rd and 24th. Practically all trainmen attended one or the other of these meetings and took an active part in the discussions, which covered operating problems, particularly with reference to the cause, prevention and method of handling accidents.

Bellingham, Wash.

A subscription fund has been raised by the Chamber of Commerce for weekly band concerts in the various city parks and Knutzen's thirty-piece band has been engaged for the season.

The distribution lines in the city of Ferndale were connected up with the lines of our company on May 15th. This city is now getting twenty-

four hours' service in place of the limited service given by the former operating company.

A South Bellingham Boosters' Club has been organized for the purpose of better co-operation between the North and South sides, where there has always existed a feeling of jealousy since the amalgamation of the four small cities of which Bellingham is now composed.

The voters of Bellingham School District have authorized an additional $2\frac{1}{4}$ mill tax levy to provide the necessary increase in teachers' salaries.

Mr. E. W. Purdy, one of the directors, spent the month of May in the east. He was at the Bankers' Convention, visited his daughter at Vadalia, La., and inspected the Hog Island plant at Philadelphia, stopping at Detroit and Chicago on the return trip.

Mr. Leslie R. Coffin, former manager of these companies, paid us a visit while on the way from Hog Island to San Francisco, where he is to engage in business.

Mr. Dexter, general accountant of the Puget Sound Companies, was a visitor during the month.

El Paso, Texas

Mr. Alba H. Warren was confined to his home several days the first week in June with a severe attack of tonsillitis.

Mr. J. C. Thirwall, of the engineering department of the General Electric Company, visited the office on June 3rd. Mr. Thirwall inspected our one-man cars, and secured some data on their operation and performance.

Pancho Villa paid Juarez a visit just after midnight on June 15th, rousing El Paso sleepers also. He was in the centre of Juarez in the early morning, but retired under the Carransista's counter attack. He attacked again Sunday afternoon, and just after midnight, because the shots had fallen on our side killing and wounding a few people, the U. S. troops entered Mexico, driving the bandits several miles south. Hardly any American soldiers were killed in the chase. We hope, and think, Villa will not come back to Juarez. We, of course, did not run any cars to Mexico these two days.

Mr. Charles A. Brann, our assistant claim agent, was married to Mrs. Ruby Hadlock Robertson at high noon June 18th, in the rectory of St. Patrick's Cathedral. Mrs. Brann is the daughter of Mr. and Mrs. Fred Hadlock, and has lived in this city since childhood. Mr. Brann is prominently identified with the University Club and the Elks, and is Grand Knight of the El Paso Council of Knights of Columbus. Mr. and Mrs. Brann spent their honeymoon at Cloudercroft, returning the last of June to El Paso, where they are at home at 4000 La Luz Street.

Mr. F. B. Scurlock, superintendent of transportation, has returned from his vacation, which was spent in Fort Worth and Dallas.

Mr. W. P. Winters, cashier, is at present on his vacation, having taken his family to Corpus Christi, Texas. He will return in a few days, after an absence of about a month.

Mr. Alves Dixon, claim agent, has taken his family in their car to Tierra Amarilla, N. M., on a month's fishing trip. They will return the latter part of July.



GENERAL PERSHING IN CONVERSATION WITH LIEUTENANT TOM P. WALKER OF HAVERHILL

Fort Madison, Ia.

P. I. Robinson attended the Iowa section convention of the N. E.-L. A., held in Colfax June 17th, 18th and 19th.

A. G. Gibbony, who has been superintendent of this company for several years, has resigned to enter the electrical contracting business in this city with A. W. Weinhardt. They have formed the Lee County Electric & Battery Station and will handle the Exide battery, in addition to the general contracting business.

I. N. Hanson, formerly system operator for the Power Company, has succeeded Mr. Gibbony as lighting superintendent.

A ten-year street lighting contract has been made with the city of Fort Madison and several additional lamps ordered.

The new moving picture theater called the "Strand" was formally opened on July 1st. This new theater is modern in every respect and is reported to be one of the finest picture houses west of Chicago, having a seating capacity of nearly 1,000.

Fort Worth, Texas

Mr. Luke C. Bradley, district manager, spent two days in Fort Worth during the month.

Mr. G. H. Clifford visited Houston the latter part of the month.

Mr. Walter H. Banner recently returned from overseas and was demobilized at Camp Bowie. He has resumed his position of assistant chief clerk in the accounting department.

Mr. A. B. Smith was recently demobilized at Camp Bowie, after returning from overseas, and expects to resume his position with the company after a brief vacation.

Mr. F. B. Scurlock, superintendent of transportation, El Paso Electric Railway Company, together with his family, spent two weeks in Fort Worth during the month.

Haverhill, Mass.

The accompanying photograph may be of interest. It shows General Pershing in conversation with First Lieutenant Tom P. Walker at the time of General Pershing's inspection of Walker's company in March, 1919. Behind General Pershing on the right is Major-General McLaughlin, commanding the First Division, and behind General Pershing on the left is Major-General Dickman. The lieutenant-colonel at Walker's left is on General Pershing's staff.

Lieutenant Walker came to the Haverhill company from the Statistical Department in September, 1916, as student engineer, and left to enter the officers' Training Camp at the Presidio, San Francisco, in August, 1917. Upon completion of his course in Training School he was commissioned a second lieutenant and sent overseas in December, 1907.

Shortly after reaching France he was assigned to Second Field Signal Battalion of the First Division and soon saw active service. Walker was cited for courage shown in maintaining telephone communications during heavy fighting and was awarded the *croix de guerre* for bravery.

Walker was promoted to first lieutenant and put in command of his

company. We learned recently that he was injured in a motorcycle accident and was in a hospital at Coblenz.

Keokuk, Iowa

On invitation of one of its members, Mr. Kuse, the regular June meeting of the High Tension Club was held at Warsaw, Illinois, after a pleasant trolley ride from Keokuk on special cars furnished by the Keokuk Electric Company. Excellent music was furnished by the Mandolin Club. The seventy members present had a most enjoyable time.

The club has been unfortunate in losing one of its members, Mr. J. J. Hiley, who has accepted a position with the Chicago, Milwaukee & St. Paul Railroad, at Avery, Idaho. Mr. Hiley was presented with a handsome traveling bag at a banquet given him by his friends.

The Mississippi River Power Company Tennis Association was the guest of the Keokuk Electric Tennis Association at a dinner given at Warsaw, Illinois, on June 27th, four days before nation-wide prohibition went into effect. This makes the second tennis victory of the Power Company over the Keokuk Electric Company. The losers furnished a very elaborate dinner.

A tournament has just been completed between the Mississippi River Power Company Tennis Association and the Country Club of Keokuk, in which the Power Company was the loser by two points to one. The Country Club scored a point and a half as winner and runner-up of the doubles, the Power Company scoring one point as winner of the singles, while the Country Club scored one-half point as runner-up in the singles. Mr. J. L. Brady was winner of the singles for the Power Company. A dinner will be given by the Power Company players, with their Country Club opponents as guests.

The new factory building in Hamilton, Illinois, in which will be manufactured inner linings for automobile tires, is going up rapidly. At the present rate the building will soon be completed and ready for installation of machinery.

Four big steel towboats for use in this part of the Mississippi River will be built for the Government at once, it is reported. These boats will cost about \$330,000 each and will ply between St. Louis and St. Paul.

During this month the Keokuk Y. M. C. A. raised by subscription for local requirements, \$11,000.

The wheat crop in the vicinity of Hamilton, Illinois, is reported to be considerably larger than ever before, and the very warm weather which we have had during June has caused the wheat to mature unusually large and well. Many stalks over six feet have been found this year, and some have been exhibited over seven feet high.

Mississippi River Power Company

Mr. C. A. Sears attended the recent convention of the Iowa Section, N. E. L. A., held at Colfax, Iowa. He was also present at the New England Managers' Meeting at New London, Connecticut, and visited Boston, New York, and other eastern points.

Messrs. F. O. Barber, P. M. Chamberlain, R. Venning and C. Her-

lofson have been released from Government service and have re-entered our employ.

Keokuk Electric Company

Mr. J. P. Ingle, manager, returned on June 3rd from attending the National Electric Light Association at Atlantic City and a visit at the Boston office. While in the East Mr. Ingle visited the Hog Island Ship Yard.

Mr. H. Vittinghoff was in Keokuk from June 14th to 18th in connection with matter of improvement at the Gas Works.

Mr. H. W. Schell took up his duties with this company on June 21st as student engineer. Mr. Schell is a graduate of the Iowa State University.

On June 15th, Mr. Arthur G. Morgan returned from Government service and has re-entered the accounting department.

On June 17th, Mr. J. P. Ingle, manager, and Mr. G. W. Carlson, electric superintendent, went to Colfax, Iowa, to attend the Annual Convention of the Iowa Section, N. E. L. A. Mr. Ingle was elected first vice-president of this section and was also elected president of the Iowa Electric Railway Association.

Mr. J. W. Dimond, assistant chief clerk, and Mr. W. V. Martin, collector, returned from their vacations on June 30th.

Mr. J. M. Wetherington, gas superintendent, returned on June 29th from a few days' visit in Chicago.

The railway, electric light and power and gas earnings show substantial increases over the previous year.

Savannah, Ga.

Mr. P. W. Gerhardt has severed his connection with the company as superintendent of railway department.

Mr. G. A. Webb has been made superintendent of transportation permanently, having been acting superintendent for several months.

Mr. Ernest Schmitt has recovered from an operation and has resumed his duties.

Mr. R. G. Carroll, manager, is now in the hospital, having undergone a minor operation.

The vacations for the summer started with Mr. Harvey H. Horrell in the early part of June.

Mr. E. W. Jewett spent a week's vacation fishing in the sounds below the city.

Davis Johnson (colored) has been reinstated as office porter, having been given an honorable discharge from the Engineers' Corps of the Army after several months' service in France.

Key West, Fla.

Mr. C. F. W. Wetterer, district manager of the Southeastern District, paid us a visit on June 15th and 16th.

Mr. K. M. Causland, manager of Lake Ariguanabo Company at San Antonio, Cuba, spent a week with us, enjoying our swimming and fishing, and was a guest at Kweco Inn.

Kweco Inn has recently been given a fresh coat of paint outside, and

extensive interior improvements have been made which add materially to the attractiveness of the building and the comforts of its members.

Wednesdays during the months of June, July, August and September are being observed as a half holiday, with all offices and stores closing at noon.

The U. S. S. "Dolphin," which was the private yacht of the Secretary of the Navy before the war, left Key West, June 16th, to be returned to Secretary Daniels, at Portsmouth, N. H.

Mr. B. L. Grooms, our manager, has recently moved his family into one of the concrete houses on South Street, facing the beach.

The members of St. Paul's Episcopal Church are now worshipping in their new building.

Mr. H. A. Kimball of the Stone & Webster engineering division has spent some time in Key West in connection with the resurfacing of our fuel oil tank with waterproof cement.

W. D. Hearne gave a reception at Kweco Inn on Monday evening, June 9th, for his mother of Winchester, Tenn., and his aunt, Mrs. V. H. Austelle, of Decatur, Ala.

Lowell, Mass.

On the evening of June 17th, the employees of this company gave a "Welcome Home" banquet and entertainment at the Harrisonia Hotel, in honor of the returned soldiers and sailors who formerly have been associated with the organization. The honored guests were as follows:

H. Russell Albro.....	Private, 11th Co., 1st Training Battalion, Air Service Signal Corps.
Joseph P. Condrey.....	Machinist's Mate, 1st Class, U. S. S. "Corozal."
Erlon V. Crimmin.....	Electrician Sergeant, Headquarters C. A. Training Center.
Harry Decelle.....	Corporal, Co. C, U. S. Nat'l Guards.
Eugene E. Dubois.....	Corporal, 66th Aerial Squadron.
Frank L. Harmon.....	Second Lieutenant, Field Artillery, Cen- tral Officers' Training Camp.
Raymond F. Ingham.....	Private, 1st Class, 209th Field Signal Battalion, 9th Div.
Frank H. Jones.....	Private, C. A. C., Battery B, 71st Regt.
Joseph Levalley.....	Private, Telegraph School, Battery D.
Frank P. Mahoney.....	Private, 34th Spruce Squadron.
Walter McInerney.....	Corporal, Battery B, 71st C. A. C., 34th Brigade.
George O'Connor.....	Corporal, 209th Field Signal Battalion, 9th Division.
William Quinn.....	Private, Co. B, 30th Infantry, 12th Division.
George O. Rennard.....	Chief Electrician, Ordnance Dept.
George A. Roche.....	Private, C. A. C., Battery B, 51st Regt.
Caleb Rogers.....	Private, 1st Class, Battery D, 51st Regt., C. A. C.
James J. Sheehan.....	Electrician, 1st Class, U. S. S. "Oakland."

Edward B. Sheridan.....Chief Machinist's Mate, U. S. S. "Mercury."

P. Frank Sullivan.....Private, 37th Co., Machine Gun Battalion.

The program for the evening was opened by an address of welcome by our manager, Mr. John A. Hunnewell. A cablegram from France expressing best wishes for a successful occasion from P. J. Wilson, a former employee and still in service, was read by Mr. Hunnewell. After the address dinner was served, the menu consisting of:—

	Tomato Bisque	
	Harrisonia Rusks	
Olives	Boiled Penobscot Salmon, Egg Sauce	Radishes
	Cucumbers	
Mashed Potatoes	Roast Young Turkey, Giblet Sauce	Asparagus on Toast
	Banana Fritters, Wine Sauce	
	Fresh Vegetable Salad, French Dressing	
	Vanilla Ice Cream	
	Fresh Crushed Strawberries	
Assorted Cakes		Demi-Tasse

Covers were laid for 117 persons. The banquet hall was prettily decorated with the National colors, its artistic arrangement lending well to the scheme of adornment. Flags and streamers, together with wild flowers and ferns in profusion, also attractive place cards and menu cards, made up the decorations.

Mr. E. C. Hart, assistant treasurer of the company, acted as Master of Ceremonies and led in spirited "community singing" of the well-known and war-time melodies. Miss Blanche McKay rendered some delightful solos, accompanied by Miss Rita Bernard at the piano, both young ladies from the accounting department. Miss McKay also sang, with banjo-mandolin accompaniment played by Miss Evelyn Lee of the accounting department and Mr. Clarke Spellman of the engineering department. Miss Gladys Dodge of the commercial department added to the pleasure of the evening with her sprightly readings.

Brief addresses were given by three of the honor guests — Mr. Caleb Rogers, Mr. James Sheehan, and Mr. Frank Harmon, — who related some interesting and amusing incidents of the late war from personal experience.

The committees in charge of arrangements were as follows:

<i>General Chairman of all Committees</i>	Mr. Leon E. Seekins
<i>Invitations</i>	Miss Blanche Gosselin Mr. Raymond Custer Miss Gertrude Leggett
<i>Printing, Menus, etc.</i>	Miss Marion Davis Miss Marie Richardson Mr. George E. French
<i>Decorating</i>	Mr. Raymond Custer Mr. Clarke Spellman Miss Evelyn Wilson
<i>Entertainment</i>	Miss Evelyn Wilson Miss Gladys L. Dodge Mr. Clarke Spellman

An orchestra furnished live music and played for general dancing at the close of the entertainment.

The party broke up at a seasonable hour, all declaring the occasion most enjoyable.

Several changes have taken place in the personnel of the organization, namely: Mr. John L. Collins, electrical engineer in charge of electrical

department at the plant and of the line distribution, has been transferred to Halifax, N. S., to fill a similar position with the operating company in that city; Mr. M. C. Smith has been chosen to fill Mr. Collins' place, Mr. Smith coming to this company recently from Plymouth, where he occupied the position of manager of the Brockton & Plymouth Street Railway Company.

Mr. Everett Reed, formerly chief engineer at Woonsocket, has been transferred to this company to fill a similar position left vacant by our former chief engineer, Mr. James H. Wood, again retiring from active business and locating at his country home in E. Barrington, New Hampshire.

Announcement has been made of the marriage on June 14th of Mr. Frank H. Jones, foreman of the meter department, recently returned from military service, and Miss Doris Fletcher, who was clerk in the distribution office at the plant. Mr. and Mrs. Jones took a short wedding trip through Vermont.

New London, Conn.

In New London on June 25th, 26th and 27th was held a very successful New England Managers' Meeting. The meeting commenced Wednesday evening with an informal dinner at the Crocker House, followed by a short vaudeville entertainment. Thursday from 9 until 12 o'clock in the morning and from 1.30 until 4.30 o'clock in the afternoon was spent very profitably under the guidance of Mr. H. T. Edgar, in a general session on the Roof Garden of the Mohican Hotel, luncheon being served in the Dutch Room. At 5 o'clock the party embarked from the Municipal Dock for Fisher's Island, where a very enjoyable dinner was served at the Mansion House. Upon return to New London, about 10 o'clock, a Dutch supper was served at the Crocker House.

Friday the general session was held from 9 until 1 o'clock, when the party proceeded via auto to luncheon at the Hotel Griswold. From the Griswold a visit was made to the New London Ship & Engine Co., and the assembly and test of Deisel Engines for submarines were observed with interest. Then the party visited the "Submarine Base" and were shown through a German submarine.

Those present and the companies represented follow:—

BOSTON OFFICE

Mr. H. T. Edgar	Mr. Vittinghoff
Mr. M. L. Sperry	Mr. Jordan
Mr. Hunter	

BLACKSTONE VALLEY GAS & ELECTRIC CO.

Woonsocket, R. I.

Gardner Rogers	C. B. Healy
H. J. Pettingell, Jr.	Mr. Nason

BLACKSTONE VALLEY GAS & ELECTRIC CO.

Pawtucket, R. I.

R. C. Brooks	Mr. Buckminster
J. A. Stiness	Cecil Brown

E. E. Nelson

FALL RIVER GAS WORKS

Fall River, Mass.

J. A. Nute

Mr. Baker

Mr. Stewart

EDISON ELECTRIC ILLUMINATING CO.

Brockton, Mass.

A. F. Nelson

Mr. Small

Mr. Forbush

HAVERHILL GAS LIGHT CO.

Haverhill, Mass.

F. I. Roberts

Mr. Johnson

Mr. Christian

THE ELECTRIC LT. & PR. CO. OF ABINGTON & ROCKLAND

North Abington, Mass.

P. Fleming

A. H. Robbins

H. R. Pratt

LOWELL ELECTRIC LIGHT CORP.

Lowell, Mass.

Mr. Hunniwell

Mr. Moody

Mr. E. C. Hart

HOUGHTON COUNTY TRACTION CO.

Houghton, Mich.

E. Milliken

KEOKUK ELECTRIC CO.

Keokuk, Iowa

Mr. Sears

THE CONNECTICUT POWER CO.

Middletown, Conn.

L. A. Keen

Mr. Tryon

A. A. Packard

Mr. Davis

Mr. Nixon

THE CONNECTICUT POWER CO.

Canaan, Conn.

H. E. Lyles

Mr. Mackie

Mr. Whiting

THE CONNECTICUT POWER CO.

New London, Conn.

F. W. Brownell

G. S. May

S. E. Ratcliffe

W. C. Shields

J. A. Southard

C. A. Lewis

R. B. Curran

E. H. Jones

W. D. Smith

J. A. McDonald

W. S. Bodwell

W. McGrath

C. Cratty

H. D. Pendleton

C. F. Lyons

C. J. Harvin

H. A. Hippler

Pensacola, Fla.

Mr. W. N. Patten, of the Engineering Division, was in Pensacola recently.

T. J. Hanlon, Jr., manager of the Tampa Electric Company, spent a week in Pensacola recently.

C. F. W. Wetterer was in Pensacola during the month.

Mr. L. P. Chaney, who has been chief engineer of our power plant for the past eighteen months, has been transferred to Pawtucket, R. I., and has been succeeded by H. R. Sharpless, previously chief engineer of the Baton Rouge Electric Company. At the time of the appointment of Mr. Sharpless as chief engineer, Mr. E. L. Bancroft was appointed assistant chief engineer, in charge of maintenance.

The Bruce Dry Dock Company has received a contract from the Emergency Fleet Corporation covering the construction of a \$450,000 dry dock in Pensacola. This contract was given the Bruce Dry Dock Company, under the conditions that the company provide a capital of \$200,000 for the purpose of the construction of shops suitable to handle work in connection with the dry dock. All of this \$200,000 stock issue was taken locally, and the construction of the dry dock will commence in the near future. This institution will be of very great value to Pensacola, in view of the fact that in the past all repair work on vessels of large size has been made in New Orleans. The dry dock to be constructed will have a lifting capacity of 5,000 tons, large enough to handle the largest steamers built by the Emergency Fleet Corporation.

A stock company has been organized and has sold stock for the construction of a \$100,000 high density cotton compress in Pensacola. The construction of this compress will assure the shipment of at least 300,000 bales of cotton a year through this port.

The first steamship has been completed by the Pensacola Shipbuilding Company, the "Cushnoc." Two other vessels, the "Escambia" and the "Nolaluca" have been launched and are now at the outfitting docks having machinery installed. The fourth vessel was scheduled for launching July 12th.

Sydney, Nova Scotia

Mr. A. Stuart Pratt, of the Boston Office, spent a couple of days here recently.

Mr. C. C. Curtis, manager, spent an enjoyable week salmon fishing in Newfoundland the first part of June. Mr. Curtis has also just made a short business trip to Moncton, N. B., including a flying visit to Halifax on the way back.

Mr. C. F. Steger, former chief clerk, has left to take the position of chief clerk of the Nova Scotia Tramways & Power Company. Accordingly, Mr. G. L. Baker has resumed his former duties as chief clerk.

Lieut. G. M. Totten, R. A. F., has recently been discharged and has re-entered the service of this company as solicitor in our Branch Office.

Mr. E. O. Smith, formerly of the Boston Office, entered upon his duties as manager's clerk the 2nd of June.

W. Ross McAulay, a former employee of this company who has recently been discharged from the Canadian-Siberian Expeditionary Force, re-entered the service of this company as a clerk in the lighting department.

Messrs. P. L. Whitaker and H. Neill, of the auditing department, are here making the annual audit of the books of the company.

The Sydney Branch Office of our company has been moved from its former quarters at 302 Charlotte Street to larger quarters on the other side of the street.

Tampa, Fla.

Mr. C. F. W. Wetterer, district manager, visited the office June 18th and also attended the employees' picnic.

Mr. P. O. Knight, vice president and general counsel, has taken a cottage at Atlantic City for the summer.

Mr. T. J. Hanlon, Jr., our manager, visited Pensacola during the month.

Mr. G. H. Wygant, for eight years connected with this company as commercial agent, has been appointed manager of the Baton Rouge Electric Company. It is with regret to all that he is leaving Tampa. The day preceding his departure Mr. Wygant was given a Spanish dinner at Garcia's, attended by twenty-four officials, department heads and employees, at which time he was presented with a diamond scarf pin, the gift of the local employees. He was also honor guest at a dinner given by the Egypt Temple Shriners at the DeSoto Hotel, attended by one hundred eighteen fellow members, and was presented with a diamond shrine pin. Mr. Wygant was elected an honorary life member of the Egypt Patrol.

Mr. F. E. Fletcher, assistant to the manager, attended the National Convention of Shriners, held in Indianapolis June 7th to 18th. Returning, he stopped off at French Lick Springs for several days.

Mr. B. E. Van Vliet of the auditing department is in Tampa making an audit of the company's books.

June 12th marked the launching by the Oscar Daniels Shipbuilding Co. of a 9500-ton steel steamship built in Tampa and named for this city for its splendid war record. A half holiday was observed throughout the city and a large crowd witnessed the launching. Judge H. C. Gordon presented two honor flags, which were accepted by Mayor D. B. McKay on behalf of the city. One flag represented Tampa's subscription to her allotment in the Victory Loan and the other represented that Tampa subscribed her allotment in all Liberty Loans.

The Tampa Electric Benefit Association held its Seventeenth Annual picnic at Ballast Point on June 19th. The children of the Children's Home were the guests of honor. The children had a merry time with their toys, games, and a big picnic dinner. The afternoon was crowded with athletic events and stunts of every description, together with water sports participated in by all. Probably the largest crowd ever assembled at Ballast Point Pavillion gathered to enjoy dancing, and the picnic was the most successful ever held by the association. One of the features of the day was the mysterious "Mr. Raffles," who awarded a prize to the first person identifying him. A fish fry was also given. All returned soldiers and sailors were given complimentary tickets to the picnic and a number participated in the various contests.

The employees of this company have formed a base ball team and expect to enter the city league.

The operation of six one-man Birney cars on the Nebraska Avenue Division was commenced in July.

Mr. R. C. Willoughby of the Pensacola Electric Company spent the latter part of June in Tampa in connection with track bonding.

Mr. J. C. McCluskey of the Key West Electric Company is visiting in Tampa.

Mr. A. R. Fisher, former collector, returned from France June 19th and has entered the transportation department.

The marriage of Mr. Albert W. H. Hirsch, of the commercial department, to Miss Carmen Oppenheimer, occurred on June 8th.

Mr. E. B. Smith, assistant to the lighting superintendent, is spending his vacation in the Carolina mountains.

The following employees have taken vacations during the month: Miss L. E. Jones, commercial department; Mrs. M. B. Wright, Miss S. J. McPheeters, Mr. J. T. Wright, Mr. N. B. Lamb, Mr. H. I. Boggs, accounting department.

COUPONS AND DIVIDENDS DUE

			Per Cent.
July	1,	Baton Rouge Electric Company, 6s (Coupon Notes), 1920.....	3
July	1,	Blackstone Valley Gas and Electric Company, 5s, 1939.....	2½
July	1,	Cape Breton Electric Company, Ltd., 5s, 1932.....	2½
July	1,	Columbus Electric Company, 6s (Coupon Notes), 1919. Principal also due.....	3
July	1,	Columbus Electric Company, Preferred Stock, 6 per cent.....	3
July	1,	Connecticut Power Company, The, 5s, 1956..	2½
July	1,	Connecticut Power Company, The, 6s (Coupon Notes), 1920.....	3
July	1,	Eastern Texas Electric Company, Preferred Stock, 6 per cent.....	3
July	1,	Eastern Texas Electric Company, Common Stock, 5 per cent.....	2½
July	1,	Electric Light & Power Company of Abington and Rockland, The, 7s (Coupon Notes), 1923.....	3½
July	1,	Electric Light & Power Company of Abington and Rockland, The, Capital Stock, 8 per cent.....	4
July	1,	El Paso Electric Company, 5s, 1932.....	2½
July	1,	*Haverhill Gas Light Company, Capital Stock, 9 per cent.....	2¼
July	1,	Houghton County Electric Light Company, 5s, 1927.....	2½
July	1,	Houghton County Street Railway Company, The, 5s, 1920.....	2½
July	1,	Houghton County Traction Company, 5s, 1937.....	2½
July	1,	Keokuk Electric Railway & Power Company, 5s, 1925.....	2½
July	1,	Mississippi River Power Company, 5s, 1951..	2½
July	1,	New London Gas and Electric Company, The, 5s, 1933.....	2½
July	1,	Northern Texas Electric Company, 5s, 1940..	2½
July	1,	Northern Texas Traction Company, 5s, 1933.....	2½
July	1,	Pawtucket Electric Company, 5s, 1938.....	2½

*Payable quarterly.

			Per Cent.
July	1,	Pensacola Electric Company, 7s (Coupon Notes), 1921.....	3½
July	1,	Reno Power, Light and Water Company, 6s, 1944.....	3
July	1,	Savannah Electric Company, 5s, 1952.....	2½
July	1,	*Savannah, Thunderbolt and Isle of Hope Railway, The, 4s, 1947.....	1
July	1,	Sydney and Glace Bay Railway Company, Ltd., 5s, 1932.....	2½
July	1,	Woonsocket Electric Machine and Power Company, 4½s, 1931.....	2¼
July	14,	El Paso Electric Company, Preferred Stock, 6 per cent.....	3
July	15,	Keokuk Electric Company, 6s, 1923.....	3
Aug.	1,	Baton Rouge Electric Company, 5s, 1939....	2½
Aug.	1,	Eastern Texas Electric Company, 7s (Coupon Notes), 1921.....	3½
Aug.	1,	*Edison Electric Illuminating Company of Brockton, Capital Stock, 8 per cent.....	2
Aug.	1,	El Paso Electric Company, 6s (Coupon Notes), 1920.....	3
Aug.	1,	*Fall River Gas Works Company, Capital Stock, 12 per cent.....	3
Aug.	1,	Houston Electric Company, 5s, 1925.....	2½
Aug.	1,	Key West Electric Company, The, 5s, 1956...	2½
Aug.	1,	*Lowell Electric Light Corporation, The, Capital Stock, 10 per cent.....	2½
Aug.	1,	Pensacola Electric Company, 5s, 1931.....	2½
Aug.	1,	*Public Service Investment Company, Preferred Stock, 6 per cent.....	1½
Aug.	1,	Puget Sound Electric Railway 5s, 1932.....	2½
Aug.	1,	Railway & Light Securities Company, Preferred Stock, 6 per cent.....	3
Aug.	1,	Railway & Light Securities Company, Common Stock, 6 per cent.....	3
Aug.	1,	Seattle Electric Company, The, 5s, 1929....	2½
Aug.	1,	Seattle Electric Company, The, 5s, 1930....	2½
Aug.	1,	Sierra Pacific Electric Company, 7s (Coupon Notes), 1922.....	3½

*Payable quarterly.

		Per Cent.
Aug. 1,	*Sierra Pacific Electric Company, Preferred Stock, 6 per cent.	1½
Aug. 15,	*Keokuk Electric Company, Preferred Stock, 6 per cent.	1½
Aug. 15,	*Tampa Electric Company, Capital Stock, 10 per cent.	2½
Sept. 1,	Jacksonville Traction Company, 5s, 1931	2½
Sept. 1,	Jacksonville Traction Company (Coupon Notes), 6s, 1919.	3
Sept. 1,	Northern Texas Electric Company Preferred Stock, 6 per cent.	3
Sept. 1,	*Northern Texas Electric Company Common Stock.	2
Sept. 1,	Pacific Coast Power Company, 5s, 1940.	2½
Sept. 1,	Peoples' Light, Power and Railway Company, Inc., 6s, 1918.	3
Sept. 1,	Seattle Electric Company, The, Seattle-Everett, 5s, 1939.	2½
Sept. 15,	*El Paso Electric Company, Common Stock. . .	2½
Sept. 15,	Galveston-Houston Electric Company Preferred Stock, 6 per cent.	3

Dividend rates are based on the last declaration.

*Payable quarterly.

Quotations on Securities

OF

Companies under Stone & Webster Management

JULY 1, 1919

The Securities Department executes orders on commission for those wishing to purchase or sell.
Requests for information in regard to the companies will be answered promptly.

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Ab. & Rock., The El. Lt. & Pr. Co. of { Notes, July, 1923	7%	99½	No	Pref	8%	120
Baton Rouge Elec. Co. { Bonds, 1939 Notes, Jan., 1920	5% 6%	87 99½	6%	83		.....
Blackstone Valley Gas & Elec. Co.	5%	93½	*6%	95		
Cape Breton Elec. Co., Ltd.	5%	85	6%	75	3%	35
Central Mississippi Valley Electric Properties	No	Bonds	*6%	40		5 N
Chicago, Wilmington & Franklin Coal Co.			*6%	85		100
Columbus Elec. Co. { Bonds, 1933 Notes, July, 1922	5% 6%	85 97½	6%	78		25
Columbus Power Co., The	5%	92		.....		.....
Connecticut Power Co., The { Bonds, 1963 Notes, Jan., 1920	5% 6%	91 99½	*6%	85		
Connecticut Valley Lumber Co. { Serial Bonds June, '22-'34	6%	97½				
Eastern Texas Elec. Co. { Bonds, 1942 Notes, Aug., 1921	5% 7%	88 100	*6%	83	5%	62
Edison Elec. Ilg. Co. of Brockton { Bonds, 1930 Notes, March, 1921 Notes, Dec., 1919	5% 5% 6%	100 100 100	No	Pref	8%	125
El Paso Elec. Co. { Bonds, 1932 Notes, 1920	5% 6%	92 9	6%	85	10%	100
Fall River Gas Works Co.	No	Bonds	No	Pref	12%	180
Galveston Elec. Co.	5%	83		.....		.....
Galveston-Houston Elec. Co. { Notes, March, 1922	7%	99½	*6%	68 ^B / _L		18 ^B / _L
Galveston-Houston Elec. Ry. Co.	5%	85	No	Pref		.....
Haverhill Gas Light Co. (Stock par value \$30)	No	Bonds	No	Pref	9%	60
Houghton County Elec. Lt. Co. (Stock par value \$25)	5%	92½	6%	18½	5%	14
Houghton County St. Ry. Co., The	5%	98	No	Pref	No	Com

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Houghton County Traction Co.	5%	85	*6%	65		15
Houston Elec. Co.	5%	96 ^B / _L		.....		.....
Jacksonville Elec. Co.	5%	88	No	Pref	No	Com
Jacksonville Traction Co.	5%	85				
Keokuk Electric Co.	6%	99½	*6%	80		.....
Key West Elec. Co., The	5%	80		.....		.....
Lowell Elec. Lt. Corp., The	No	Bonds	No	Pref	10%	155
Mississippi River Power Co.	5%	80 ^A / _B		48 ^A / _B		13½ ^A / _B
Northern Texas Elec. Co.	5%	85	6%	80 ^B / _L	4%	60 ^B / _L
Northern Texas Traction Co.	5%	92	No	Pref		.....
Pacific Coast Power Co.	5%	90	No	Pref	No	Com
Pensacola Elec. Co.	{ Bonds, 1931 Notes, Jan., 1921	5% 7%	85 99	50		5
Ponce Elec. Co.	6%	95	No	Pref		.....
Public Service Investment Co.	No	Bonds	*6%	75		15
Puget Sound Elec. Ry.	5%	85 ^B		.....		.....
Puget Sound Power Co.	5%	93	No	Pref	No	Com
Puget Sound Trac., Lt. & Pr. Co.	{ Notes, 1921	7%	101	*6%	†66	17
Railway & Light Sec. Co.	{ First Series, 1935 Second Series, 1939 Third Series, 1939 Fourth Series, 1942 Fifth Series, 1944 Sixth Series, 1946	5% 5% 5% 5% 5% 5%	93½ 92½ 92½ 91½ 91½ 91	*6%	85	6% 80
Savannah Elec. Co.	5%	65 ^B / _L		15		5
Seattle Elec. Co., The	{ 1st Mortgage, 1930 Cons. & Ref., 1929 Seattle-Everett, 1939 The Seattle Ry., 1921	5% 5% 5% 5%	96 ^B / _L 91 ^{L 85 97}	No	Pref	No Com
Sierra Pacific Elec. Co.	{ Notes, Feb., 1922	7%	98½	*6%	60	5
Tacoma Ry. and Pr. Co.	5%	83	No	Pref		.....
Tampa Elec. Co.	5%	93	No	Pref	10%	120
Whatcom County Ry. & Lt. Co.	5%	85	No	Pref	No	Com

Quotations are approximate. All stocks \$100 par value unless otherwise specified.

*Cumulative. †Ex-Dividend. A. Listed on London Stock Exchange. B. Listed on Boston Stock Exchange. L. Listed on Louisville, Ky. Stock Exchange. N. Common shares have no par value. X. Ex-rights.

LIBRARY NOTES

Naturally, the publications that concern problems of the changing times in consequence of the war are many. The Annals of the American Academy of Political and Social Science for January had the general title "Reconstruction Labor Policy." The Annals for March had the general title "Industries in Readjustment." He who reads these reads in each case a symposium upon some important questions of the day.

The report of the War Service Committee of the American Library Association for the year ending June 30th is embodied in a pamphlet 8 x 10 of 78 pages. This is an historical sketch of the Library War Service, June, 1917 to January, 1919, which should be read by those who are critical of what the American libraries contributed to the war. There were camp library buildings, branch libraries, work overseas, hospital libraries, etc. Perhaps the most interesting paragraphs of the report are those under the caption "What the Men Read," page 47.

The Guaranty Trust Company of New York has issued a pamphlet on "Trading with China," and another on "How Business with Foreign Countries is Financed." A representative of the Guaranty Trust Company came to the recent Library Convention and told interestingly of the large number of points that need to be taken account of in developing our foreign trade.

The National Industrial Conference Board, which is a federation of American industries for the study of industrial problems, improvement of industrial relations, promotion of industrial prosperity, has issued a book which gives the personnel of the Board and the member associations and their delegates. In each are represented the following manufactures: cotton, hardware, paper and pulp, electrical, chemical, wool, automobile, boot and shoe, foundry, metal trade, rubber, silk, railway cars, type making, and a few others. Headquarters are at 15 Beacon Street, Boston, with a possibility that sooner or later it will be transferred to New York.

LIBRARY OF STONE & WEBSTER

Recent Accessions

(10) Civil, (20) Electrical Engineering

- 356 Dustless concrete floors. L. C. Wason. 8p, 6x9. *0772.W28
- 357 National Army Cantonments: plans and photographs, June, 1918. . . prepared under the direction of George Gibbs, Jr., Major, Q. M. C. Construction Division. War Department. [1918] unpag., 11½x9, illus. *6835.065
- 358 Resuscitation from electrical shock by the prone pressure method; recommended by N. E. L. A. Supplement to "Electrical World," 6/14/19. 1p, 15x11, illus. *6921.R86p
- 359 Electric light and power from small streams. A. M. Daniels. Separate from Yearbook of the Department of Agriculture, 1918. No. 770. Wash., 1919. 20p, 6x9. *6880.02el
- 360 Transactions of the American Institute of Electrical Engineers, Jan. to June 26, 1918, Vol. 37, Pt. 1. 832p, 6x9, illus. *6910.Pt.1. 1918
Also Transactions of the American Institute of Electrical Engineers, July to Dec., 1918, Vol. 37, Pt. 2. (1055+)p, 6x9, illus. *6910.Pt.2.1918
- 361 Directory of members of the American Electrochemical Society, Jan. 31, 1918. 55p, 6x9. *6911.093.1911

(30) Mechanical, (40) Mining

- 362 Proceedings of the Institution of Mechanical Engineers, Oct.-Dec. 1918. London [1918]. 632p, 5½x8½, illus. *6952.1918b
- 363 The American petroleum industry. R. F. Bacon and W. A. Hamor. . . New York, 1916. 2 vols. Vol. 1: — 446p, 6x9½, illus, map. Vol. 2: — (517p), illus. *075.B136.Vols.1&2

(74) Finance and Insurance

- 364 The Bankers Encyclopedia (purple book). . . 49th ed., 25th year. March, 1919. Bankers Encyclopedia Co. New York [c1919]. 2527p, 8x10½. *025.St9
- 365 Reports of the condition of the State, private and savings banks at the close of business on Nov. 1, 1918, as appears from the reports filed in the office of the North Carolina Corporation Commission. Raleigh, 1919. 183p, 6x9. *3304.025
- 366 Special report of the Public Service Commission relative to the finances and operating methods of the Boston Elevated Railway Co. Feb. 1918. House No. 1240. Boston, 1918. 91p, 6x7. *1461.-El2.025ar
- 367 Fourth annual report of the Federal Reserve Bank of Boston for the year ended Dec. 31, 1918. Wash., 1919. 53p, 6x9. *1461.F317. 1918
- 368 How business with foreign countries is financed. 1919. Guaranty Trust Co. of New York. New York [c1919]. 55p, 6½x9½, illus. *025.G931b
- 369 The new price revolution. Irving Fisher. . . [Read before conference of Governors and Mayors at the White House, March 3-5, 1919.] together with papers on "Outlook for building costs" — an important report to Illinois Legislature; also, "Currency inflation and result on prices." J. J. Arnold. U. S. Department of Labor. Information and Education Service. Wash., 1919. v. p., 6x9. *6899.In35.0271
- 370 Public service properties, 1919. W. S. Barstow Co., Inc. New York, 1919. 61p, 5x7½. *0231.B28.1919

- 371 Sixty-third annual report of insurance commissioners of the Commonwealth of Massachusetts. Jan. 1, 1918 (business of 1917). Part 1: — Fire and marine insurance. Part 2: — Life, miscellaneous, assessment and fraternal insurance. Boston, 1918. vp, 6x9. *1400.In7.1917.Pts.1&2
- 372 Best's insurance reports (fire and marine)... 1919-1920. Alfred M. Best Co., Inc. New York [c1919]. 744p, 8x11. *055.B464.1919-20

(75) Annual Reports

- 373 Eleventh annual report of the Board of Railroad Commissioners and ex-officio Public Service Commission of the State of Montana for the year ended Nov. 30, 1918. Helena [1918]. 232p, 6x9. *5304.1918
- 374 Reports of the President and the Treasurer of Harvard College, 1917-18. Cambridge, 1918. 235p, 6x9. *1445.H26p.1917-18
- 375 Twenty-fourth and final report of the Boston Transit Commission for the year ending June 30, 1918. Boston, 1918. 65p, 6x9, map. *1461.T68.1918
- 376 Ninth annual report of the Trustees of the State Library, Massachusetts, for the fiscal year ending Nov. 11, 1918. Boston, 1919. 16p, 6x9. *1400.L61.1918
- 377 Report of the War Service Committee of the American Library Association for the year ending June 30, 1919. Albany, 1919. 77p, 7½x10. *6991.W195.05

(76) Legal

- 378 Public utilities reports annotated:... 1919 A. Lawyers Co-operative Publishing Co. Rochester [c1919]. 1137p, 6½x9½. *035.-L449.1919A
- 379 Public utilities digest: annual, 1918. Rochester [c1919]. 772p, 6½x9½. *035.L449d.1918
- 380 The Flatbush Gas Co., Electric Department, Brooklyn, N. Y. Schedule applies to 29th Ward, regarding rates for retail power service; also, wholesale light and power service. H. E. McGowan. May 5, 1919. unpag., 9x11½. *1791. F616.025
- 381 Joint resolution for a conference of capital and labor, by Mr. Poindexter. 66th Congress, 1st Session. S. J. Resolve No. 57. June 17, 1919. Wash., 1919. 2p, 7½x11. *6800.0317cl

(80) Statistics

- 382 The Review of Economic Statistics — monthly supplement. The post-war level of commodity prices. June, 1919. Harvard University Committee on Economic Research. Cambridge, 1919. 11p, 11x16. *025.H26s.6/19
- 383 The Review of Economic Statistics. April, 1919. Preliminary volume, No. 2. Harvard University Committee on Economic Research. Cambridge, 1919. (103p), 11x16. *025.H26.4/19
- 384 Statistics of the Dominion of New Zealand for the year 1917. Vol.3: — production, finance, postal and telegraph. New Zealand Government Statistician. Wellington 1918. 232p, 8x13. *7380.-02.1917.Vol.3

(90) Sources of Information

- 385 Official American Textile Directory, 1919. Compiled by the Textile World Journal. New York, 1919. 830p, 6x9. *093.T314.1919
- 386 Donnelley's "Red Book": the national buyers' guide and sales catalog... March, 1919. The Reuben H. Donnelley Corporation. Chicago [c1919]. 1632p, 9x11. *093.D7188.3/19
- 387 The New International Year Book: a compendium of the world's progress for the year 1918. Editor, F. M. Colby, M. A. New York, 1919. 791p, 7½x10½, illus. *091.In8.1918
- 388 Simmons College Bulletin, March, 1919. Vol. 12, No. 5, Pt. 1. Summer session, 1919. Boston, 1919. 43p, 6x8. *1461.Si47su.1919

- 389 Simmons College seventeenth annual catalogue, 1918-19. Part 1: General information. Boston, 1918. 115p, 6x8. *1461.Si47.1918-19
- 390 Simmons College announcement of courses, 1919-20. Boston, 1919. 189p, 6x8. *1461.Si47c.1919-20
- 391 School of Social Work, Simmons College, 1919-20. Boston, 1919. 18p, 6x8. *1461.Si47s.1919-20
- 392 Harvard University descriptive catalogue, Nov., 1918. Harvard University. Cambridge, 1918. 495p, 5x8. *1445.H26cd.1918-19
- 393 Announcement of the courses of instruction offered by the Faculty of Arts and Sciences for the academic year 1919-20. 1st ed. Official Register of Harvard University. Cambridge, 1919. 135p, 5x8. *1445.H26in.1919-20
- 394 Engineers Club of Boston. By-laws, officers and list of members. June 1, 1919. 40p, 4x7. *1461.En3.093.1919
- 395 Charter, by-laws and house rules of the Exchange Club, Boston, with list of members to May 1, 1919. 72p, 4x7. *1461.Ex24.093.1919
- 396 Trading with China: methods found successful in dealing with the Chinese. Guaranty Trust Co. of New York. New York [c1919]. 24p, 6½x9½, illus. *027.G931t
- 397 Fabrication filing — an appeal for standardization by G. W. Lee. Reprint from "Filing." Vol. 2, June, 1919, No. 5. (4p), 6x9. *085.L51f
- 398 Manual for stenographers and phonograph operators. Internal publication No. 1009, Jan., 1919. General Electric Co., Schenectady, New York. New York, 1919. 21p, 8½x11. *081.G286.No. 1009
- 399 A factory library: a list of suitable books for a factory library. [In] American Wool and Cotton Reporter, May 29, 1919
- 400 Select list of references on economic reconstruction: including reports of the British ministry of reconstruction... U. S. Library of Congress. Wash., 1919. 47p, 7x10. *6808.096er
- 401 Suggestions and specifications for color advertising in "The Literary Digest." unsp, 10½x10. *065.L7127
- 402 List of publications of the Department of Commerce available for distribution. 17th ed. May 1, 1919. U. S. Department of Commerce. Division of Publications. Wash., 1919. 78p, 6x9. *6890.096.1919
- 403 Wilson's peace message to American public. [In] Boston Evening Record, 6/28/19. Boston, 1919. *6800.W69pm
- 404 The Review: a weekly journal of political and general discussion. Vol. 1, No. 1, May 17, 1919. Published by The National Weekly Corporation. About 30p, 9x12. R — 5/17/19
- 405 International Oil Investor: utilities — mines — metals — industries — rails. Vol. 1, No. 3. May 26, 1919. Published by International Oil Investor Co. Boston, 1919. 12x18. I O I.5/26/19
- 406 The use of print: its advocates in conference. A paper published daily at Conference of American Library Association, Asbury Park, N. J., June 23-27, 1919. Nos. 1-5. *6991.065.Nos.1-5

Miscellaneous

- 407 A resource that every engineer should know. Letter to Editor from G. W. Lee, suggests "if engineer has a question that puzzles him should send his question to the American Library Association." Clipping from E N — May 29, 1919, p. 1080. *087.L511l
- 408 A national lumber and forest policy. H. S. Graves... U. S. Department of Agriculture. Circular No. 134. Office of the Secretary. April, 1919. Wash., 1919. 14p, 6x9. *6880.C134
- 409 Production of lumber, lath and shingles in 1917. F. H. Smith and A. H. Pierson. U. S. Department of Agriculture. Bulletin No. 768. Professional Paper, April 5, 1919. Wash., 1919. 44p, 6x9. *6880.B768

**The Securities Department wishes to
bring to the attention of members
of the organization the following:**

We do a general investment banking business and specialize in the securities of companies under the management of our organization and in the securities of companies which we have investigated.

The resources of a large organization are at all times available to investors who desire information concerning investments or service in connection with the purchase and sale of securities.

STONE & WEBSTER

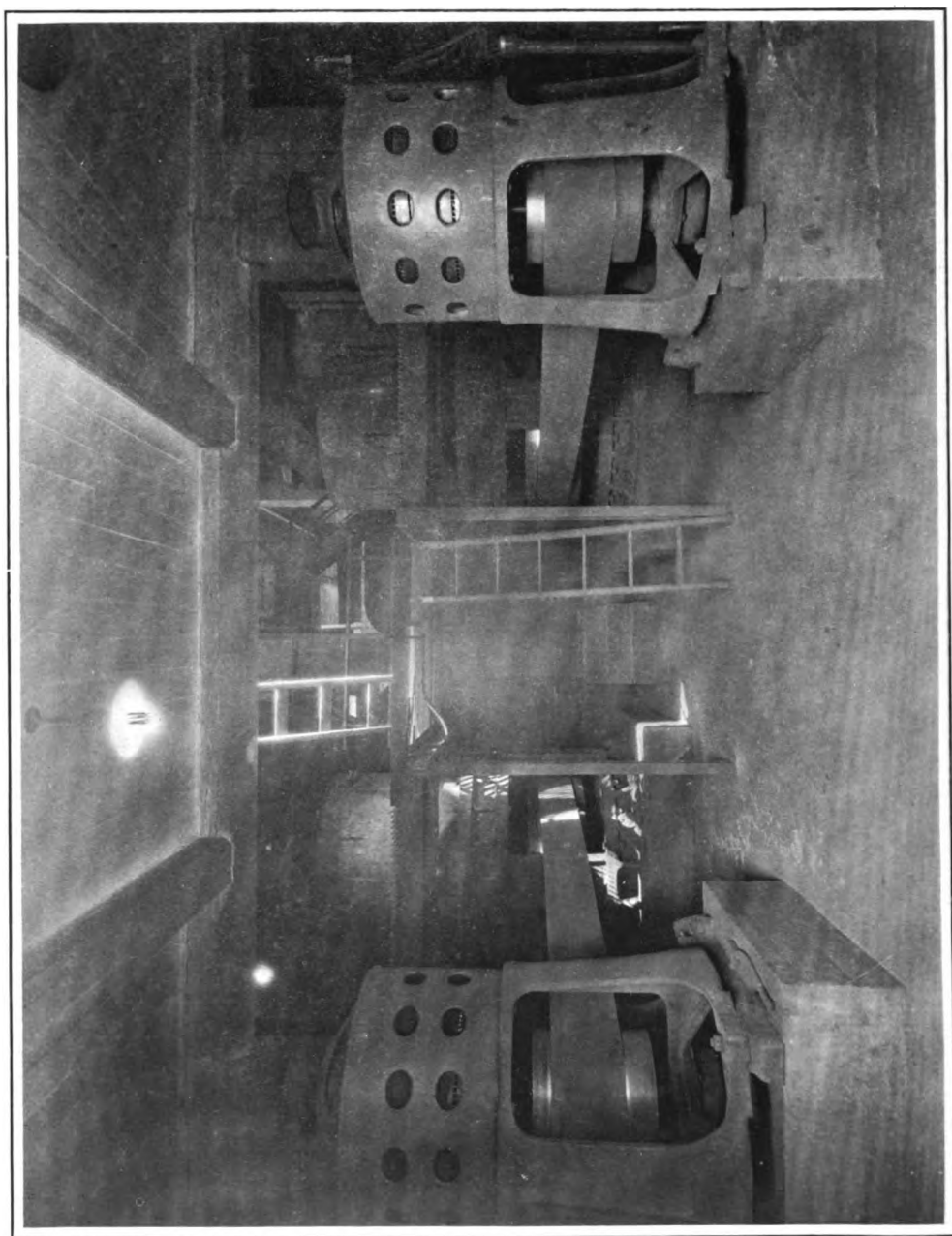
Members of the organization are invited not only to avail themselves of this investment service, but also to help in broadening its usefulness by calling it to the attention of others.

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FULLER MILLS AND MOTORS AT SEATTLE COAL PULVERIZING PLANT

STONE & WEBSTER JOURNAL

AUGUST, 1919

EDITORIAL COMMENT

Government by Railroad Employees

The railroad men's ultimatum came as a clap out of the blue and created an astonishing wave of emotionalism. Yet after all, it was the natural consequence of the Adamson Law of 1917 and of the economic conditions brought about by the war. Policies which look harmless at the start are often the most destructive in the end. This country is now confronted with a socialistic program which the most effective of all our labor organizations threatens to carry to the polls next year, if it is not accorded legislative sanction before then. This program, commonly known as the Plumb Plan, provides that the Government shall buy the railroads and pay the private owners in bonds "with a fixed interest return for every honest dollar they have invested"; that a tripartite control shall be established in which the public, the operating management and labor itself be represented equally; that the public, the operatives and the wage earners shall share equally all revenue in excess of the guarantees to private capital, the operators and the employees to have half the savings which are expected to be made by such a perfected organization, and the public the other half in increased service or decreased cost.

The question in most minds is, Does the Plumb Plan apply the plumb rule? A straight line is not always a plumb line. It is plumb only when taken in connection with something else, and "something else" seems to have obtained quite minor consideration in framing the program under discussion. This program looks like an attempt to build a bridge without an accurate study of stresses. A bridge seems simple enough when

you look at it. It is an attempt to span a stream or a chasm; but many a bridge has broken down because the builder was careless in his calculations.

The railway men's plan has too many phases to be discussed by any one person at any one time. It branches out in so many directions, each of which should be minutely explored, that it would take months and years for a skillful and prudent mind to satisfy itself of its feasibility. If the nation should adopt it, it would have to do so with the consciousness that it was taking a great leap in the dark. These are adventurous times, but this adventure is calculated to phase us. Still, there is no knowing what a people may do under the stress of emotionalism, so that while hoping for the best we shall not be unwise if we prepare for the worst.

Those who read history know that great wars, great plagues and great cataclysms of nature have a tendency to loosen moral bonds. Is that the case now? We know what has happened in Russia and Hungary, and it is pertinent to ask if anything analogous has happened in lesser degree in other countries, our own included. The situation in Russia and Hungary is commonly discussed as an economic situation. It is certainly economic in its outcome; but did it not spring from the loosening of moral bonds? How much economic thought did the Russian soldier, workman or peasant give to the grave problems confronting the Empire on the overthrow of tzardom? He acted on the perfectly natural and wholly unrestrained impulse to seize all the loot and land he could while the opportunity existed, and to take a protracted vacation. He is now paying for his vacation by starvation, and we are asked to feed him.

But who will feed us if we conclude to follow his example? He was egged on in his senseless career by such men as Lenine, who did his thinking for him. As a thinker Lenine has not turned out a great success. No sooner had his train for the Millennium started than it got off schedule. He knows now that it will not reach its terminus in this generation, and has consequently set the date of arrival forward several generations. Several generations is a long time to wait, and if the Russians are like the rest of us their patience won't hold out. Perhaps ours won't if Congress listens to Mr. Warren Stone and Mr. Plumb.

The trouble is that everybody's desires both here and

elsewhere have outstripped his pocket-book. Perhaps this was not consciously the case in Russia prior to 1917. Conditions had always been so hard there that the people had got used to them and were not looking for much more. When the political earthquake came and the opportunity unexpectedly arose for everyone to make at least one grab at the existing wealth of the Empire, desire suddenly leaped into being. Something analogous to that, though in a lesser degree, happened in other countries. In this country the war demands effected a great redistribution of the product of industry. This went on for five years, and with added intensity during the last two years of the period, the desire of the fortunate beneficiaries of this redistribution accelerating all the time.

But an unfortunate thing has happened. At the start the beneficiaries of the redistribution of wealth found themselves very much richer than ever before. This produced a psychological change in them, the effect of which we are now witnessing. No sooner had they begun to get this increased wealth, from which they derived such a feeling of satisfaction, than everything for which they could exchange it advanced in price. This made them demand over and over again a larger and larger proportion in the distribution of the annual wealth of the nation; but with every enlargement in the proportion there went an enlargement in the prices of the things they could exchange their wealth for. It was this fact that made the railway men tell President Wilson recently that these steady increases in their proportion of the wealth of the nation were doing them no good, and that he must see to it that prices come down. And as one means to this end they have told him that the Government must take over the railroads, eliminate private capital, and practically allow the operatives to run them.

In terms of speech, that is not so bad as what has happened in Russia. But in terms of thought it points to the same thing. Soldiers and workmen's committees set out to run Russia, and workmen's unions have practically announced that they are going to run America. What has happened in Russia makes one shudder at the thought of what is likely to happen here. In Russia the Bolshevist government has been working night and day to use up, that is, destroy, the existing capital, from the employment of which the Russian people obtain their bread and butter. They have done this in the baldest, crudest and most sensational way possible, and the whole world is shocked.

But a rose will smell as sweet by any other name. After all, it does not make much difference whether you take another man's goods and destroy them once for all, or merely make it impossible for him to employ his capital in making goods necessary to support your life. In either case you will starve sooner or later, or at least go very hungry. By changing the name of things we sometimes think we can change their character; but an elephant remains an elephant though you may call him a fly, and with all the power of an elephant.

The trouble with the world today is that it is tired. Everybody wants to have just as much as he had in the past, or more, but nobody wants to work as hard to get it. In time some one may arise who will be able to tell us how to get more and work less, but he has not yet put in appearance. If we are going to have more we have got to work more, and there is no logic in the world that can disprove this fact. There would be no trouble in this country today if, along with the increase in wages the last few years, there had gone an increase in production; that is, if every man who consumed more had produced more. But this is just what so many people wish to avoid. Their aim is to have more and do less. The problem is purely arithmetical. With a man consuming more and producing less, how long can he hang out? Multiply the result in the case of one man thirty or forty million times, and the result will stagger one. Yet that is the problem that confronts this country today.

A publication of the railway men said the other day: "Wage increases must go to the workers as long and as steadily as prices rise; but it is not progress in civilization, it is merely the belated settlement of an arithmetical complication. *Not before the citizen who desires it can live a richer life is a nation going ahead.*" Note that not a word is said here about more work. If a particular citizen is going to have a richer life without doing more work, there is only one way he can get it. He will have to take part of somebody else's share. Now the railway men apparently propose to do this. They say they are going to give the present private owners of the railroads 4% bonds with a fixed interest "for every honest dollar they have invested." This looks euphemistic. In the first place, who is going to decide what constitutes an honest dollar in railroad investments? Take the case of a man who years ago was offered some bonds to build a railroad to open up the country, but who, in view of the risk, would not buy them without a stock bonus.

Does this bonus represent an honest or a dishonest dollar? Will the fact that without the bonus the railroad might not have been built, and that there might have been a good deal less work in the country and a great deal less prosperity, have any weight? Some railroads today are worth on an impartial valuation a good deal more than the total of their outstanding securities. Does this excess represent an honest or a dishonest dollar? These considerations may have much or little weight in the minds of the railway men, but they certainly have a great deal of weight in the minds of the private owners of the railroads.

Again, what is going to happen to the private owners if they are forced to take 4% bonds in the amount represented by the honest dollars they have put into the railroad properties? In the aggregate the bonds will probably equal the sum total of the war debt of the United States, which of itself would make an interesting problem in finance for the Government. But let us ignore the latter feature for a moment. The private owners, we will say, have 4% bonds handed over to them, and have parted with their title to the railroads. They take them under compulsion and are subject to the risk of a falling market. How shall we characterize the loss which they may have to take from this procedure? Is it a mere act of God, as the law books say, or is it the result of their own folly, or is it an act of expropriation? Bearing in mind that the 4% bonds will not be paid to them except as representing dollars "honestly" invested in the properties, will the forced shrinkage of their wealth which may ensue from a falling securities market be an act of national dishonesty? At bottom is that much worse than anything that has happened in Russia?

Once more, what will the railway men do with the private owner who insists on having cash instead of 4% bonds? A good many will be likely to insist. Will the Government have to sell a good many billion dollars of bonds to obtain the cash to pay the private owners? This is a serious question. If the private owner is made to take bonds whether he will or will not, will it be honest treatment? If the Government decides to pay him cash and tries to float bonds will it be good for the country, the railway men included? The railway men talk about a division among themselves of the surplus earnings of the railroads under Government control. But will there be any surplus earnings? At present there is huge deficit to be made up as a

result of the Government's intervention in railway management in the last year and a half. Will the railway men allow that to be made good by such surplus earnings as the railroads may show in the future under Government ownership, or will they insist that it shall remain as a dead weight on the American taxpayer?

After all, it is the taxpayer's problem. He has got to pay the interest on the bonds which are issued by the Government to the private owners, and he has got to make up all the deficit from operating the roads. How much more taxes can he stand? Of course he can pay more than he now does if he earns more; but with everybody consuming more and producing less than in the past, how is he going to earn more? If the world works ten hours a day and produces so much and consumes so much, how can it prosper if it works eight or six hours a day and produces less while consuming more? That seems to be the program of organized labor, and if it receives legislative sanction there can be but one result — we shall tend steadily backward toward the Stone Age. Of course we shall not get there immediately, but we shall have discomfort enough even at the start. Leisure is a very expensive thing. If railroad rates continue to advance the price of everything we consume will advance. If taxes continue to go up, rents will go up, commodities will go up, and the railway men will tell us that wages will have to go up too. But if wages go up again under Government control of the railroads, then either railroad rates or taxes, and probably both, will go up in company. Here you have the vicious circle with a vengeance. A community cannot be happy long with its members all taking in each other's washing. It can go on longer if some of the members are adding new wealth to the community from time to time than it can if all the members are living merely on existing wealth.

But there is no use being too lugubrious over the situation. As a nation we have not altogether taken leave of our senses. On the other hand, the railway men's bark is probably a good deal worse than their bite. The railway men in the past have been sensible and right-minded. They are as much interested in keeping the industries of the country from destruction as the rest of us. The situation today is unthinking, but the chances are that tomorrow we shall as a whole be clothed in our right minds. It never rains but it pours. But, on the other hand, it is always darkest just before dawn. The present situation is

distressing, but perhaps it will avert an even more distressing one, and indeed prove a corrective of our existing ills. Things have been drifting ever since the European War began, and the current has been very much stronger since we entered the war. The railway men's ultimatum may compel us to take our affairs in hand and devote serious and scientific thought to them. If it does it will prove a blessing in disguise. Relatively few Americans have any desire for socialism, for high taxation, for the restraining of individual action, for political jobbing, for the impairment of intellectual activity, for the dead monotony which socialism implies in a mind that looks facts squarely in the face. Anything that makes the danger of socialism more imminent will shake the American people from their sluggishness; will make them think seriously, take far-sighted views, increase their latent determination that this country, at least, shall be ruled by sense and not by nonsense, shall tend upward rather than downward, shall be honest rather than dishonest, shall be happy rather than miserable.

New Economics

The newspapers have recently printed an interesting statement by Ex-President Taft. He presided at a meeting of the National War Labor Board before which was discussed the question of a wage advance on certain electric railways. Mr. Homer Loring, chairman of the trustees of the Bay State Road, said that the Bay State was not in sufficiently good financial condition to meet the demands of the men. He then, the account says, launched into a financial history of the property, but was interrupted by Chairman Taft with these words: "This Board has often said that the question of wages of men is not to be determined by the financial condition of the Company."

Yet it must be decided by something, for there is never an effect without a cause, and there is never a loss without somebody to stand it. Where a street railway is concerned there are only three parties in interest, on one or the other of whom the loss must fall — the owners, the operatives, the customers.

It is self evident that the principle enunciated by Mr. Taft is a novel one, for if it had been previously accepted no money would ever have been invested in street railway properties. In saying that the question of wages is not to be deter-

mined by the financial condition of the company, Mr. Taft contravenes a fundamental law of industry. Under economic law that is the only way the question of wages can be determined. A public utility company cannot operate on any other principle — except, of course, some charitable organization stands ready to make good its deficits.

It will be interesting to note what will happen under Mr. Taft's ruling. The owners of a street railway cannot and will not continue to operate the road with a permanent deficit staring them in the face. It would be better for them to scrap the road and write off their investment as a loss. To maintain the service with no hope for the future would be an act of insanity.

No one would expect the second party in interest, namely, the operatives, to make good the deficit. The loss must, therefore, fall on the third party, the customers or the public. There is no other way in which it can be taken care of, and taken care of it must inevitably be. This consideration is today generally ignored, but eventually if things go on as at present, it must be squarely faced. The conclusion of the matter is then that the question of wages on a street railway must be determined either by the financial condition of the company or by municipal tax levy.

Danger lurks in the principle laid down by Mr. Taft in the Bay State case. In the first place, it is likely to prove as fatal under municipal ownership as under private control. In the second place, it is easily susceptible to extension over the whole field of private and municipal activity, with resultant chaos. A good many entering wedges are now being driven into our social and industrial structure, but none seems more likely to split the structure in twain than Mr. Taft's. In saying this we do not ignore the fact that in this case he was merely applying a rule previously adopted by the War Labor Board.

THE OPERATION OF SAFETY CARS IN BRIDGEPORT, CONN., U. S. A.

BY J. S. GOODWIN

[A statement made before the Commissioners of Public Utilities of Nova Scotia by Mr. J. S. Goodwin of Bridgeport, Conn.]

In the city of Bridgeport, the trolley system of which I am manager is known as the Bridgeport Division of The Connecticut Company. You will perhaps be interested in knowing that Bridgeport is a manufacturing city with a population of approximately 180,000 people. The city is governed by a mayor and a common council, consisting of twenty-four representatives; these, in addition to a special traffic commission of three appointed by the mayor, Public Utilities Committee of the State of Connecticut, have jurisdiction over the operation of trolley cars in this city. The operation of safety cars in Bridgeport was put into effect on February 1, 1919, and they have been in operation to date, with the full sanction of these governmental bodies. As a matter of fact, a short time after the safety cars had been put into operation the Traffic Commission of the city of Bridgeport recommended their adoption on all lines within the city. Nine of the cars are used in regular service, operating on a five-minute headway, on a line that is five and one-half miles per round trip. One end of this line serves a tenement house district, and the other end one of the best residential sections in the city, while these cars traverse a distance of approximately one mile in the center of the city, this central street being probably the most congested city street in New England, if not in the whole United States. For example, this street is only forty feet in width, and over it are operated forty-eight regular cars in each direction per hour, in addition to which fifty extra cars are run during rush hour, every one of which passes over these tracks. A check of the vehicular traffic on this street shows that in addition to the above, three to four hundred cars pass along this street per hour in each direction. In this connection this quotation of letter received from Captain Charles A. Wheeler, Head of the Police Traffic Department, is of interest:

"We have watched with a great deal of interest the operation of the One-Man-Trolleys in this city, and to our minds there is no doubt but what they are a success.

"We would like to see all lines running within the city limits equipped with them; the police have excellent control over them in traffic, as they can see from their positions in the street when the cars are loaded and ready to start.

"They have helped to relieve the congestion noticeably."

When the safety cars were first received here, many of our operating officials, including myself, were skeptical concerning whether or not these cars would be able to make as fast running time as our four-motor, double-truck cars. As a matter of fact, these cars are now being operated at an average rate of speed of eight and one-half miles an hour against seven and one-half miles an hour previously made over the same lines.

The first week that the cars were put into operation they carried ten thousand more revenue passengers than were carried during the previous week. This has gradually increased, until today we are carrying between twenty and thirty thousand more passengers per week than were carried prior to February 2nd.

The cars will seat thirty-two passengers, but will carry comfortably from forty to fifty persons. From our records I find that we have carried as high as ninety persons on one of these cars at one time. Our records further show that we have carried as many as 150 to 175 on a round trip. The public generally have been well pleased with the cars, and newspaper comment has been very favorable, even to the extent of demanding that more of these cars be put in service.

Accidents on safety cars have been reduced to a minimum, and while we have had some slight accidents, such as collisions with vehicles, still these accidents are bound to happen in a city of this size. We have, however, had no accidents which could be attributed to the different class of equipment on the safety cars, and the fact that they are operated by one man.

From our experience with the operation of safety cars in Bridgeport, we find that they can satisfactorily cover the routes which any double-truck car can cover, are very easy riding, are pleasing to both public and employees, and I am of the opinion that they will be the means of giving the public better service than would be possible with the double-truck cars. I am of the firm conviction that as soon as it is financially possible to do so, the safety car will be adopted and will replace double-truck cars for city operation.

In conclusion I wish to state that from a personal observation of the belt line in the city of Halifax, and my knowledge covering five months of actual operation of safety cars, together with my twenty-four years' experience in the operation of street cars, I do not hesitate to recommend the adoption of the safety car for service on this line.

A RECORD BREAKING YEAR AT HOG ISLAND

BY B. F. DORAN

On August 5, 1918, there was presented a spectacle at the Hog Island shipyard, which was never before witnessed in any shipyard in the world. It was the occasion of the launching of Hog Island's first ship; a time when the American troops in France aided by their noble Allies were battering the German army into submission.

Much had been written and said about the speed with which the American International Shipbuilding Corporation was constructing the world's largest shipyard, and the speed with which the material that goes to make up the vessels that were destined to play an important part, not only in the commerce of the world, but that of Philadelphia, was being received and used; but the occasion of the launching of the first ship at Hog Island far surpassed all the stories of the almost superhuman task that had been accomplished in the construction of the yard, during the Winter of 1917-18.

Over one hundred thousand persons were present when Mrs. Woodrow Wilson smashed the traditional bottle of champagne against the bow of the "Quistconck," and the huge steel hull slid gracefully down the ways into the gray waters of the Delaware, and the news was flashed the world over that Hog Island had launched its first ship, and that other cargo carriers were in various stages of completion, and ready to take their place in the new merchant marine of the United States. The news reached Germany, too, and before long the thought in the minds of most people familiar with the operations of the United States Shipping Board was, "What psychological effect is the wonderful work being accomplished at Hog Island having upon our Allies, neutrals and enemies?"

The question was appropriately answered by the "Manufacturer's Record" of January 23, 1919, which said in part:—

"The miracle wrought in the building of the Hog Island shipyard did have a very great psychological effect upon our Allies, neutrals and enemies. It gave encouragement to the Allies, as it indicated to them the marvelous possibilities of American energy and power when thrown into war. It steadied the neutrals by showing them something of the American force which had become active as against Germany, and Ger-

many knew full well what was being done at Hog Island, and knew that its doom was sealed through the building of that and other great shipyards, which made certain the failure of the submarine campaign."

So much for the early days of the Hog Island job.

When the armistice was signed on November 11, 1918, the yard was immediately placed on a peace, instead of war, basis; all overtime and unnecessary night work being abolished. This, of course, resulted in a decrease in ship production, as it meant the shipbuilders went on a forty-four-hour a week basis, which compared with sixty and seventy hours a week during war-time, and which, had the war lasted, would have been at the rate of twenty-four hours a day every day in the week, or a total per week of 168 hours, as the training department established in the early days of the job was turning out men that had been taught the various shipbuilding trades.

With the signing of the armistice, the public naturally lost interest in the work being accomplished by the United States Shipping Board, but the Hog Island shipyard was launching ships at an average of one every four days, until May 30, when five of the huge cargo carriers were launched in forty-eight minutes and ten seconds.

However, when August 5, 1919, rolled around, and Hog Island celebrated its first anniversary of ship launching by launching its forty-seventh ship, it needed but a short search to discover that during its first year the yard had established a new world's record for ship production — 367,775 deadweight tons launched in one year, of which thirty-six ships of a deadweight tonnage of 281,700 tons are now on the high seas carrying American products to all quarters of the globe, and had it not been for the heavy rains during the month of July, the record would have been fifty ships, or a total of 391,250 deadweight tons.

Since the "Quistconck" sailed from Norfolk, Va., on January 2, 1919, with a large cargo of coal, the Hog Island ships have covered 225,000 nautical miles and carried over 400,000 tons of cargo to practically every port of importance in the world. The vessels have functioned perfectly on their voyages, and have firmly established the fabricated ship in the eyes of the American people and the peoples of the foreign countries.

Fourteen of the thirty-six ships delivered loaded their initial cargoes at piers in Philadelphia, and approximately 50

per cent of the ships now at the outfitting piers and on the ways will be assigned to companies operating from the port of Philadelphia. All of the vessels are registered in the port of Philadelphia, and are carrying the name of the City of Brotherly Love along the trade routes of the seven seas. The Hog Island ships that carried their initial cargoes from the port of Philadelphia were the Prusa, Sapinero, Sagaporack, Saucon, Saluda, Saco, Sahale, Schodack, Schenectady, Sangamon, Schron, Scantic and Salvation Lass.

The "A" class ships built at Hog Island are of 7,825 tons dead weight, 400 feet long and 50 feet beam.

Fuel oil, which has proven to be more efficient and economical than coal, is used to operate the vessels. It requires less carrying capacity and greater mileage is secured from a pound of oil than a pound of coal, and as the fuel is carried in a double bottom of the vessel, it therefore allows more cargo-carrying space.

Oil as fuel has also abolished the drudgery of the fireroom. It is more easy to handle, and cuts down the fireroom force thirty per cent. It gives a more uniform steam pressure in the operation of the vessel, and eliminates the toil of shoveling coal and the cleaning of the fires beneath the boilers. It also adds to the cleanliness in operation.

In the coal-burning vessels the coal is stored in parts of the hold that could otherwise be occupied with cargo, and when a coal burner makes a trip light (without cargo) water must be carried as ballast. With the oil burners, this is just the opposite, as the fuel oil acts as ballast on the voyage.

A few years ago, a man in the fireroom of a coal-burning vessel received from \$30 to \$40 a month for his services, and to keep the arrow on the steam gauge at the necessary mark, he was required to shovel at least one ton of coal an hour. Today a man in the fireroom of an oil-burning vessel receives from \$90 to \$100 per month for his services, and he feeds the fuel to the fires by merely turning a valve.

All of the vessels built at Hog Island are equipped with geared turbine engines, which have proven to be vastly superior to the old-fashioned reciprocating engines. A very desirable feature of the former engine is that the propellers can be run at lower speed than the reciprocating engines, when a vessel is running in the fog or in the vicinity of icebergs.

The geared turbine engines now on the Hog Island ships

weigh but fifty-three tons, the gears weighing thirty-eight tons and the turbines fifteen tons. They have proven to be more economical than the older style engines, and use less steam per shaft horse power developed and with these engines the vessel can be brought to full speed and reversed quicker than with the older type. They are also more compact than the reciprocating type, take up less room on the ship, and are more easily handled. The engines are automatically lubricated, which eliminates the services of several oilers, thereby reducing the operating expenses to a certain extent. It has been demonstrated by the Hog Island ships that geared turbines have proved to be over 25 per cent more economical than the direct turbine driven type.

The future of Hog Island — that is, what the Government will do with it when the American International Shipbuilding Corporation completes its present contract for 110 of the "A" type ships, and twelve of the "B" type — is at the moment a question that is interesting not only to the 30,000 employees of the shipyard, but everyone who has the interest of the city of Philadelphia at heart.

The present contract for ships will be completed along about September, 1920. Hog Island covers 846 acres of land along a two-mile front of the Delaware River, which has a thirty-five foot channel — a channel deep enough to float the biggest vessel now sailing the seas. The outfitting piers, where the vessels receive their finishing touches after launchings, consist of seven piers, each 1,000 feet long, 100 feet wide, with four standard railroad tracks connecting with the Pennsylvania, Reading and Baltimore & Ohio systems, affording the logical point for the establishment of a combination ship construction, ship repair and "free port" terminal.

The eighty miles of railroad tracks, together with the many miles of roadway, buildings, warehouses and the facilities of a modern town of 50,000 population are all favorable points which the group of capitalists, who are reported to be negotiating for the purchase of the shipbuilding plant, considered, when they opened the reported negotiations for the purchase of the yard.

The ship repair problem is at present in as bad a state as the ship construction was when the United States entered the war. The dry dock facilities in the United States are far from adequate to meet the demands brought about by the increase

in the merchant marine of the United States. Prudent ship owners deem it advisable to dry dock their ships every six months or so and have the bottoms scraped and repaired, as the barnacles picked up in salt water, if allowed to remain on the hulls, interfere with the speed of the vessel; the dry dock facilities at present being such that oftentimes it is necessary for a vessel to wait a month or more before it is able to be docked, thereby resulting in a considerable loss to the owners.

THE PUGET SOUND TRACTION, LIGHT AND POWER COMPANY'S PULVERIZED COAL PLANT

With the rapid increase in the price of coal and fuel oil since the beginning of the world war, boiler plant operation became more and more costly. Shortly after the United States entered the war, fuel oil and coal, along with other war essentials, were placed under close Government control.

To overcome transportation difficulties each section of the country was requested to become self-supporting, wherever possible, and for the state of Washington this meant, among other things, the use of local coal instead of the imported fuel oil in the operation of all steam plants.

The Puget Sound Traction, Light & Power Company of Seattle, Washington, include among their public utilities a steam heat plant, having in service four 300 H.P. boilers with superheaters of 100°-120° superheat, three 400 H.P. boilers, one 500 H.P. boiler and two 600 H.P. boilers, one of which was installed during 1918. The boilers are Babcock & Wilcox vertical header type water tube boilers, supplying steam at 125 lbs. pressure. The superheaters installed in the 300 H.P. boiler only are also of Babcock & Wilcox manufacture.

This plant was being operated with fuel oil, so in the early summer of 1917 a careful study was made in the use of coal as fuel, to decide on the most economical design of a coal burning plant. Pulverized coal had been tried out at the plant and very satisfactory results were obtained, one of the 300 H.P. boilers having been arranged for the series of tests which were made during the early months of 1917. The results of these tests, together with the fact that an enormous culm dump of over 225,000 tons at the Renton Mine, a short distance from Seattle, was available as fuel, led to the decision to use pulverized coal as a fuel for the steam plant. The original plans called for pulverized coal for one-half the plant only, but after a careful study of first costs it was decided to equip the entire plant for the use of pulverized coal. Another important feature in using pulverized coal is the availability of the present oil burning equipment when fuel oil is again restored to its former

basis. This permits an interchange of fuel, in case of emergency, of either short or long duration, produced by breakdowns or other unforeseen causes.

The Culm

The culm dump consists of the washings from the Renton Mine, where a Washington lignite coal is mined having a calorific value of approximately 9,000 B.T.U. with 18% moisture and 16% ash. The culm as received has a calorific value of approximately 7,300 B.T.U., adherent plus inherent moisture 25%, volatile matter 28%, fixed carbon 26%, ash 20%. This culm costs \$0.75 per ton at the mine, twenty-five cents per ton loading charges and sixty cents per ton freight charges, or \$1.85 per ton f.o.b. raw coal bunkers.

Construction

The construction of the plant for the utilization of pulverized coal may be described under the following heads:

- (1) Handling raw coal — Conveying coal from storage bunkers on east side of Western Avenue to raw crushed coal bunkers.
- (2) Drying — Conveying coal from raw crushed coal bunkers through the dryers to dry coal bunkers.
- (3) Pulverizing — Conveying coal from dry coal bunkers through the pulverizing mills to the pulverized coal bunkers.
- (4) Burning — Conveying coal from pulverized coal bunkers to furnace.
- (5) Handling the ashes.
- (6) Miscellaneous construction.

Raw Coal Bunkers

The raw coal bunkers are of heavy wood construction, three in number, having a total capacity of 725 tons. The bunkers are raised to such an elevation that the coal from them can be conveyed to the plant through a tunnel which is located six feet below the street grade. The bunkers are served by a standard gauge double track, coal being delivered in hopper bottom dump cars of 30 tons capacity, handled by an electric motor switching engine. Each bunker is 24' x 24' at the top for a distance of ten feet downward, at which point all sides slope to the center of an angle of approximately 40° with the vertical. The culm contains an excess of ash and refuse, which

greatly retards the sliding action. To aid this action it was found necessary to line all the bunkers with No. 20 gauge galvanized iron.

Raw Coal Belt Conveyors

The raw coal is fed through 32" x 24" double rack and pinion coal gates to a 20" feeder belt. To properly feed the culm it is necessary to open the gates wide. To control the feed an auxiliary hopper has been built directly under the gate opening, with a vertical slide which can be raised or lowered to regulate the coal on the belt. This belt travels at the rate of 265 F.P.M. This belt conveys the coal to a single roll type crusher, built by Mead-Morrison Mfg. Company, which crushes the coal to $\frac{1}{2}$ " size. A by-pass chute is installed in connection with the crusher so that the smaller size coal can be fed directly onto another conveyor belt. A 10 H.P. motor drives the feeder belt and a 30 H.P. motor drives the crusher.

The crusher pit, being lower than the ground water level, is provided with a sump for drainage purposes.

The conveyor belt from the crusher passes through the tunnel under the street grade and is a combination incline horizontal belt 20" in width. It has a speed of 300 F.P.M. and is driven by a 15 H.P. motor.

Raw Coal Elevator

The elevator consists of a double strand fixed continuous bucket conveyor traveling in a No. 16 gauge steel casing, with a speed of 150 F.P.M. The coal is carried up a distance of 75' in this elevator, where it is discharged onto a double strand chain steel flight conveyor.

Raw Coal Flight Conveyor

The flight conveyor distributes the coal over the raw crushed coal bin through four rack and pinion slide gates in the bottom of conveyor trough, traveling at the rate of 100 F.P.M.

All the coal handling equipment from the storage bunkers to the raw crushed coal bunkers has a capacity of 75 tons per hour, and with Buckwheat coal, 90 tons have been handled.

Crushed Coal Bunker

The crushed coal bunker has a capacity of 325 tons, is constructed of reinforced concrete with a top cross-section of

18' 6" x 36' 0", branching into two hoppers, with a 10" x 5' 0" discharge opening in the bottom of each.

Dryer Feeders

To convey the coal from the crushed coal bunker to the two dryers, two 30" apron feeders are provided — one for each opening in the crushed coal bunker; each feeder is provided with a vertical sliding rack and pinion gate to regulate the flow of coal. Both feeders discharge into a common chute, in which is arranged a flopper gate and steel plate diaphragm which can be so set that either feeder may discharge coal into either dryer or both dryers. Each feeder has a capacity of 25 tons per hour, and a speed of 20 F.P.M.

A 6" screw conveyor with a steel plate hopper handles the drippings from the return side of each feeder and discharges these drippings into the feeder discharge spout. Both feeders and screw conveyors and their drives are supported from the under side of the raw crushed coal bunkers. Both feeders and their screw conveyors are driven by one 7½ H.P. motor.

The feeder discharge chute branches into two 10" pipe sections which feed into the two dryers.

Owing to the high temperatures encountered at the lower end of the pipes, a special paddle arrangement was devised to clear the pipe, which eliminated the use of a bearing in the high temperature. A series of paddles 8" long were welded about the circumference of an extra heavy 1½" pipe. They are spaced at an angle of 90° from each other, following in consecutive order and are given ½" lag. This pipe is mounted on a 1½" shaft, which is held stationary in the feed pipe by means of brackets. The bracket at the lower end is fastened directly to the bottom of the feed pipe which projects into the dryer a distance of 18". The upper end of the feed pipe is a lateral, the side opening of which connects directly with the main discharge chute. The paddle extends up through the straight section of the lateral, the upper bracket holding the shaft being supported to the framework outside the pipe. The cover for the upper end of the feed pipe is a special casting which bolts to the flanged end of the pipe and supports the bearings for the drive shaft propelling the paddle. Each paddle is driven by a 1 H.P. motor, belt connected, speed 60—70 R.P.M.

Dryers

The dryers are of the indirect fired rotary type, manufactured by the Fuller Engineering Company, — one 5' diameter by 52' long, the other 6' diameter by 52' long. The firebox is built to the side of the dryer, setting being connected to the same through an arched opening.

Vertical baffles control the direction of the heat, forcing it to cross and recross the dryer. Beyond the last baffle the heat passes through the breeching to a hood which connects with the lower end of the dryer. The temperature of the gases at this point is reduced to about 500° F.

An induced draft is produced for the dryers by two Sirocco fans, the fan for the larger dryer having a capacity of 25,000 cu. ft. per minute and the one for the smaller dryer having a capacity of 16,000 cu. ft. per minute, each driven by a single stage Terry steam turbine. The fan is directly connected to the feed end of the dryer, which is enclosed in a concrete setting separate from the furnace, the latter beginning 10' from the upper end of the dryer. By this arrangement the heated gases from the breeching are drawn through the dryer over the coal, thus greatly aiding in the drying process. The temperature of the gases passing through the fan is about 270° F.

Dust Recovery

As first installed, all but the finest dust was collected in the cyclone and carried downward through spouts into 6" screw conveyors, one for each cyclone. These conveyors fed into another 6" screw conveyor which carried the discharge into the dryer feed pipes. This arrangement proved unsuccessful, as the dry dust, mixing with the wet coal in the feed pipe, caked on the sides of the pipe and continually choked the pipe. Then again, this dust being carried to the feed end of the dryer would to a large extent be carried up the air duct again and thus travel in a complete circuit. To overcome this disadvantage the discharge screw conveyor was relocated and extended so as to discharge into the dry coal elevator, described below. After several trials here it was found to be too small to handle the amount and the kind of material here encountered. With the finer dust the 6" screw conveyor does not appear to operate successfully when fed to capacity, as the screw has a tendency to pack. The 6" screw conveyors were taken out and one 12" screw conveyor, enclosed in a cast iron pipe, was substituted.

The bottom of the cyclones was directly connected to the upper end of the conveyor by 10" pipes.

Dryer Capacities

The smaller dryer's capacity is 7 tons per hour, and the larger dryer will handle 10 tons per hour. The moisture content is reduced from approximately 16% to 2.25% with a temperature of 220° to 240° for the discharged coal. These results were obtained with Newcastle Buckwheat; the figures will be reduced somewhat with culm.

Dry Coal Elevator

The coal from the dryers discharges into spouts which, in turn, discharge into the dry coal elevator. On the lower side of these sloping spouts are attached horse-shoe magnetic separators, one for each spout, which retain all iron scrap, such as spikes, bolts, nuts, nails, etc. These magnets are hinged in place and are easily cleaned at regular intervals. The dry coal elevator consists of a single strand fixed bucket type of conveyor in a No. 14 gauge steel elevator casing.

From the dry coal elevator the coal is discharged centrifugally into a spout leading to a 12" screw conveyor over the dry coal bins. The screw conveyor distributes the coal in the bins through eight steel extension spouts. It is driven by a 5 H.P. motor.

Dry Coal Bunkers

The dry coal bin is of reinforced concrete construction, having a capacity of 160 tons. Access is had to the bin through three cast iron manholes.

As some of the warm air currents will pass up through the supply spout to the elevator, a small vent is installed at the top of the dry coal elevator. In addition to this, a pipe connection is made between the elevator casing about 12' from the bottom and the larger dryer hood to release any gases that may collect in the elevator shaft and also to maintain a continuous circulation of air in the elevator by the aid of the induced draft fan connected to the dryer.

The dry coal bin is subdivided into four hoppers from the bottom of which coal is fed directly to the four pulverizing mills through 12" diameter hinged steel spouts. The flow of the coal is regulated at the bottom of the hoppers by means of duplex bin gates.

Pulverizing Mills

The plant is equipped with three 42" Fuller-Lehigh fan discharge type pulverizers and one Raymond impact pulverizing mill, with one 42" Fuller-Lehigh mill as a spare.

The Fuller mills each have a capacity of $3\frac{1}{2}$ tons per hour with a resulting pulverized product, 80—85% of which passes a 200-mesh screen, and 95—98% passes a 100-mesh screen. The Raymond has a capacity of $5\frac{1}{2}$ tons per hour with a resulting product, 70—75% of which passes a 200-mesh screen, and 93—97% passes a 100-mesh screen.

In addition to the feed regulation at the bottom of the dry coal bin, the feed hopper of the mill is provided with a slide which can be raised or lowered to regulate the amount of material entering the feeder trough containing a feed screw. This screw conveyor feeds the coal into the mill; it is driven direct from the mill shaft by means of a belt passing over a pair of three step cone pulleys. This arrangement provides a range of three speeds for the screw feed. Each Fuller mill and the Raymond mill are driven by a 75 H.P. motor.

Screw Conveyor — Fuller Mills to Pulverized Coal Elevator

The pulverized coal from the Fuller mills discharges through spouts into a 12" screw conveyor, which has a vent box running the full length of the trough. This vent box has a graduated sectional area of from $1\frac{1}{2}$ sq. ft. at first mill to 4 sq. ft. at last mill.

No cyclones or dust collectors are used in connection with the Fuller mill, but the excess air from the mills is carried direct to the furnace through the aid of the 8,000 cu. ft. per minute induced draft fan mentioned above. The fan is driven by a 5 H.P. motor. This air, carrying considerable coal dust in suspension, is fed directly to the furnace through auxiliary supply pipes.

To regulate the suction in the vent box an opening 10" x 16" was cut into the vent pipe just above its connection with the vent box. To regulate the admission of free air to the pipe a vertical sliding door is installed. By increasing the free air intake opening, suction at the discharge end of the mills is decreased and vice versa.

Pulverized Coal Elevator

The pulverized coal elevator operates in a reinforced concrete housing divided into two compartments, keeping the loaded and empty buckets entirely separate from each other.

One-half inch clearance was allowed in all parts of the shaft, thus overcoming the possibility of dust lying dormant in any part of the elevator. This type of elevator also insures a dust-proof casing. Coal enters the pulverized coal elevator from the 12" screw conveyor through a spout. The uptake for this elevator is of a special design and is placed at the top of the elevator. The sprocket at the bottom is stationary, giving the buckets a very small clearance at the bottom of the shaft, which prevents coal dust from accumulating there. This elevator is operated by a 10 H.P. motor and discharges into a 12" screw conveyor.

Raymond Mill Equipment

In the Raymond mill the coal is pulverized by impact, an upward current of air from an exhaust fan having sufficient carrying power to take with it the finest particles, leaving the coarser until they are pulverized to the necessary fineness. The discharge from the mill leads to a cyclone separator from which the pulverized coal is discharged into the 12" screw conveyor above mentioned. The air discharge from the cyclone separator leads back to the mill, thus completing the circulation. The velocity of the air at the intake end of the cyclone is greater than the velocity at the outlet, hence back pressure results in the mill. To overcome this back pressure an air duct is connected to the return discharge line, through which air is drawn by use of an induced draft fan. This air current carrying fine dust in suspension is fed to one of the boilers through an auxiliary feed line. A 30 H.P. motor drives the large exhaust fan from the Raymond mill and a 3 H.P. motor drives the fan on the pressure relief line.

Screw Conveyors — Pulverized Coal Elevator to Pulverized Coal Bunkers

The 12" screw conveyor leading from the pulverized coal elevator is centrally located with respect to the boilers. It is directly connected to four 12" screw conveyors which operate at right angles to the supply conveyor. These four conveyors lead to the various bins above the boilers, through dust-proof spouts. The feed is regulated by ordinary slide gates in the bottom of the conveyor trough. Each screw conveyor is driven by a 5 H.P. motor.

In addition, the supply conveyor is connected to the storage bins supplying the two dryers, through spouts.

Pulverized Coal Bunkers

The pulverized coal storage bins for the dryer furnaces are constructed of structural steel and have a capacity sufficient for eight hours' steady operation. Of the bins supplying the boilers, eight are of reinforced concrete and two of structural steel. Each has a capacity of approximately 15 tons, sufficient for from nine to fifteen hours' operation, depending on the size of the boiler. These bins are all of dust-proof construction, as is all the coal handling equipment beginning with the dryers and ending with the burners. The bins are so constructed that no pockets will form and that there is very slight possibility of arch action. This allows a free flow at all times of pulverized coal into the feeder.

Feeders

Each bin above the boilers is built with two hoppers, each hopper supplying the feeder. In all there are 22 feeders in use, all of the screw conveyor type. One of the dryers and a 300 H.P. boiler are equipped with Santmyer feeders. Two of the 300 H.P. boilers, two of the 400 H.P. boilers and one 600 H.P. boiler are equipped with Fuller feeders. The other dryer, one 300 H.P. boiler, one 400 H.P. boiler, one 500 H.P. and one 600 H.P. boiler are equipped with Locomotive Pulverized Fuel Company's feeders. All are designed upon the same principle, the coal passing from the hopper into the feeder, where it is conveyed horizontally by means of the screw to a vertical outlet pipe, varying in size from 4" to 6" in diameter. Upon reaching this pipe a current of air, introduced through a 3½" diameter auxiliary air feed pipe, carries the coal downward directly to the burner. This air current is supplied by two Sirocco fans of 50,000 cu. ft. per minute capacity each. They are located at opposite ends of a large supply duct from which all the feeders branch. Air is supplied to the feeders under a static head discharge pressure equal to 10" of water. In addition, two 3,000 cu. ft. per minute Sturtevant fans supply several individual feeders. These small fans are directly connected to 11 H.P. Moore steam turbines. The larger fans are directly connected to 67 H.P. Moore steam turbines.

The Fuller and Santmyer feeders are equipped with 1½ H.P. Crocker-Wheeler Direct Current Motors, having a variable speed of 300 to 900 R.P.M. back geared to a counter-shaft. The feeder is chain driven in both types; the Santmyer feeder has a speed of 125 to 150 R.P.M. for ordinary operation,

and the Fuller feeder a speed of 100 to 150 R.P.M. under normal conditions, depending on the size of the boiler being supplied and the load carried.

The Locomotive Pulverized Fuel Co.'s feeder is equipped with a specially designed General Electric direct current motor, which is directly connected to the feeder. This feeder operates at a much lower speed owing to the shorter length of conveyor, which with high speeds will flood. The motor has a variable speed of 500 to 1,500 R.P.M., rated at $1\frac{1}{2}$ H.P. at 230 V. and 6.95 Amp. The feeder has a speed of from 30 to 60 R.P.M. under normal operating conditions. The feed is regulated entirely with the motor controller, the connection between the hopper and the feeder being at all times open. The air supply is regulated by means of valves in the air feed lines.

Burners

The burner is nothing more than a specially designed elbow with three openings, one for the fuel coming from the feeder, another smaller one for the additional air feed, and the third for the discharge into the furnace.

Following a series of experiments with various types of burners, the Santmyer burner was eventually installed throughout the entire plant. It was found that due to the shape of the furnace, better results were obtained by placing the burners below the floor.

Dutch Oven

A "Dutch Oven," 5' x 6' x 5' high, was added to each of the boiler settings to increase the size of the combustion chamber. However, from careful observations made at this point, depth, rather than a large cross-section, is the essential factor in the proper combustion of pulverized coal.

Combustion Chamber

The dimensions of the combustion chamber proper are approximately 14'6" x 8'6" x 5'0" high, including the "Dutch Oven." These dimensions, particularly the height, increase with the larger boilers. The sloping section of the chamber has a depth of 6'6" and reduces to a cross-section of 3' x 3' at the bottom, where it enters the ash pit. The ash pit is 4' x 4' in cross-section and has a clear height of 3'6". The ashes are removed through a heavy cast iron door, lined with 4" fire brick. The entire combustion chamber is constructed of reinforced concrete up to the boiler room floor, or approximately

a foot below the top of the sloping section. Above this line the original brick construction is encountered. The special brick lining consists of a $4\frac{1}{2}$ " thickness of Sil-o-cel brick and a $13\frac{1}{2}$ " thickness of first class fire brick.

The excessive heat in the ash pit, which to a certain extent radiates through the front face of the same, made the handling of the ashes very difficult. To remedy this, an additional concrete wall was constructed in front of the original wall with an air passage between. This passage was left open at the top, thus permitting the radiated heat to pass upward and escape without interfering with operation.

Ash Crusher

The resulting ash varies in composition from fine powder to exceedingly hard slag, but the largest percentage consists of rather soft clinkers. Some ash accumulates on the back slopes and wall of the combustion chamber as soft slag and clinkers, and a small amount is deposited back of the bridge wall as a fine powder. The major portion of it falls into the ash pit, from which it is raked at regular intervals and allowed to cool, preparatory to crushing.

The jaw crusher is set up on trucks with the feeder platform level with the bottom of the ash pit. The car travels upon rails and is driven by a 5 H.P. direct current motor; the crusher is operated by the same motor. With five boilers on each side of the firing aisle, this crusher car serves all the furnaces. The basement floor is depressed 4' between the boilers, to permit sufficient clearance for the crusher and the drag chain conveyor into which it discharges. The crusher reduces the ashes and clinker to 1" and smaller, so that it can be readily handled by the drag chain and elevator.

Drag Chain Ash Conveyor

The drag chain conveyor is located in the bottom of the depression, extending along the entire length of the trench, approximately 100 feet in length. It consists of a 12" link drag chain traveling in a heavy cast iron trough. It is driven by a 5 H.P. motor. The drag chain conveyor discharges into a chute which leads into the ash elevator.

Ash Elevator

The ash elevator consists of a single strand chain with 6" x 10" buckets, enclosed in a steel casing. It is driven by a

5 H.P. motor from the head shaft. As the top of the elevator extends 15' above the roof of the building, a chain drive is used, the motor setting on the roof. The capacity of the ash handling equipment is limited to the capacity of the crusher, which is 5 tons per hour.

Ash Bunker

The ash elevator discharges into a spout leading to the ash bin, which is constructed of reinforced concrete and has a capacity of 110 tons. The bin is subdivided into two hoppers with three sloping sides and the fourth side vertical, being the one to the rear of the building; this brings the opening at the bottom of the hopper on line with the vertical face and permits of the use of a vertical sliding gate.

A platform has been built, from which the gate can be operated by means of a lever. As the rear of the building adjoins the railroad tracks, the steel chute used to convey the ashes from the bin is hinged in place so that when not in use the chute is raised by means of a block and line. The ashes are hauled away in trucks.

Miscellaneous Construction

A sump pump driven by a $\frac{1}{2}$ H.P. motor takes care of the seepage in the raw coal crusher pit. Another pump driven by a 1 H.P. motor takes care of the seepage and drainage into the mill room. A third sump pump driven by a 2 H.P. motor removes the seepage and waste water from a sump which collects the water used in cooling the ashes.

Boilers No. 1 and No. 11 are connected to steel stacks of sufficient height for natural draft. The stack connected to boiler No. 11 was erected during the summer of 1918, has a diameter of 5' and a height of 80'. The remaining boilers are connected to a low steel stack, draft being induced by a 11' diameter x 5' wide Sturtevant fan driven by a 50 H.P. motor. This motor was installed during the summer of 1918, being located upon the roof of the boiler room, to avoid the excessive heat above the boilers. It is enclosed in a corrugated iron motor house.

To the rear of the mill room is located the transformer room, where the alternating current is stepped down from 2,200 volts to 220 volts. In addition to the transformers the switch-board for the plant is located here. A garage has been constructed at the rear of the building for the ash truck.

Operation

The culm is loaded at the mine directly into the coal cars by use of a Bagley scraper, operated by a double drum hoist driven by a 125 H.P., D.C. motor. A single span truss with a solid floor having an opening to permit the coal to drop into the car below, is erected above the railroad track at right angles to the same. The Bagley scraper hauls the coal to the opening where it drops into the car.

The coal is delivered to the storage bunkers at night, two additional men being furnished to help the train crew in unloading the cars. One man takes care of the raw coal equipment, coal being transferred from the storage bunkers to the crushed coal bunkers during an 8-hour shift sufficient for the 24-hour run. One man looks after the feeders into the dryers, which, owing to the higher temperatures at the discharge, tend to clog up. Another man operates the dryers and mills. He has an assistant who looks after the distribution of the dry coal and pulverized coal in the bunkers above.

Both mills and dryers are operated continuously. Pulverized coal is used as the fuel for drying; approximately one ton of pulverized coal being burned to dry 20 tons of the raw coal. The ashes are removed from the dryer settings through openings at the floor level. The dryer must necessarily be shut down during this operation, which occurs at intervals varying from five to eight days.

The water tender also takes care of feeders, which are regulated by controllers located on the boiler room floor. The machinery is kept in operating condition by an oiler. Two helpers keep the tubes clean by operating the soot blowers and the use of a special steam jet inserted through the front of the setting. This operation is performed at four-hour intervals. In addition to this they also blow down the tubes.

Three additional helpers remove the ashes from the dryer settings, clean the combustion chambers when necessary and remove the ash deposit back of the bridge wall at regular intervals. This deposit is wetted down in the setting to facilitate handling and to avoid spreading of dust. It is taken out through the cleanout doors, loaded in wheelbarrows and dumped into the ash elevator. One cleaning per week is sufficient to take care of this deposit. The slag accumulating on the sides of the combustion chamber is removed at intervals varying from six to ten weeks, depending on operating conditions.

The ash falling into the pit below is removed with long rakes. The ashmen look after this work, while the third operates the drag chain and ash elevator, and feeds the ash crusher. The ash as found in the pit consists of slag and powdered dust. The slag is pulled out near the door and cooled off with a stream of water. When sufficiently cool it is pulled out onto the runway in front of the ash pit, where it is again drenched to speed up the cooling, after which it is fed to the crusher.

With the exception of handling the raw coal and removing the deposit back of the bridge wall, which work is taken care of by a single shift, all operations are continuous, being carried on with three shifts working eight hours each.

THE KEOKUK INSULATOR TESTER*

BY R. B. HOWLAND

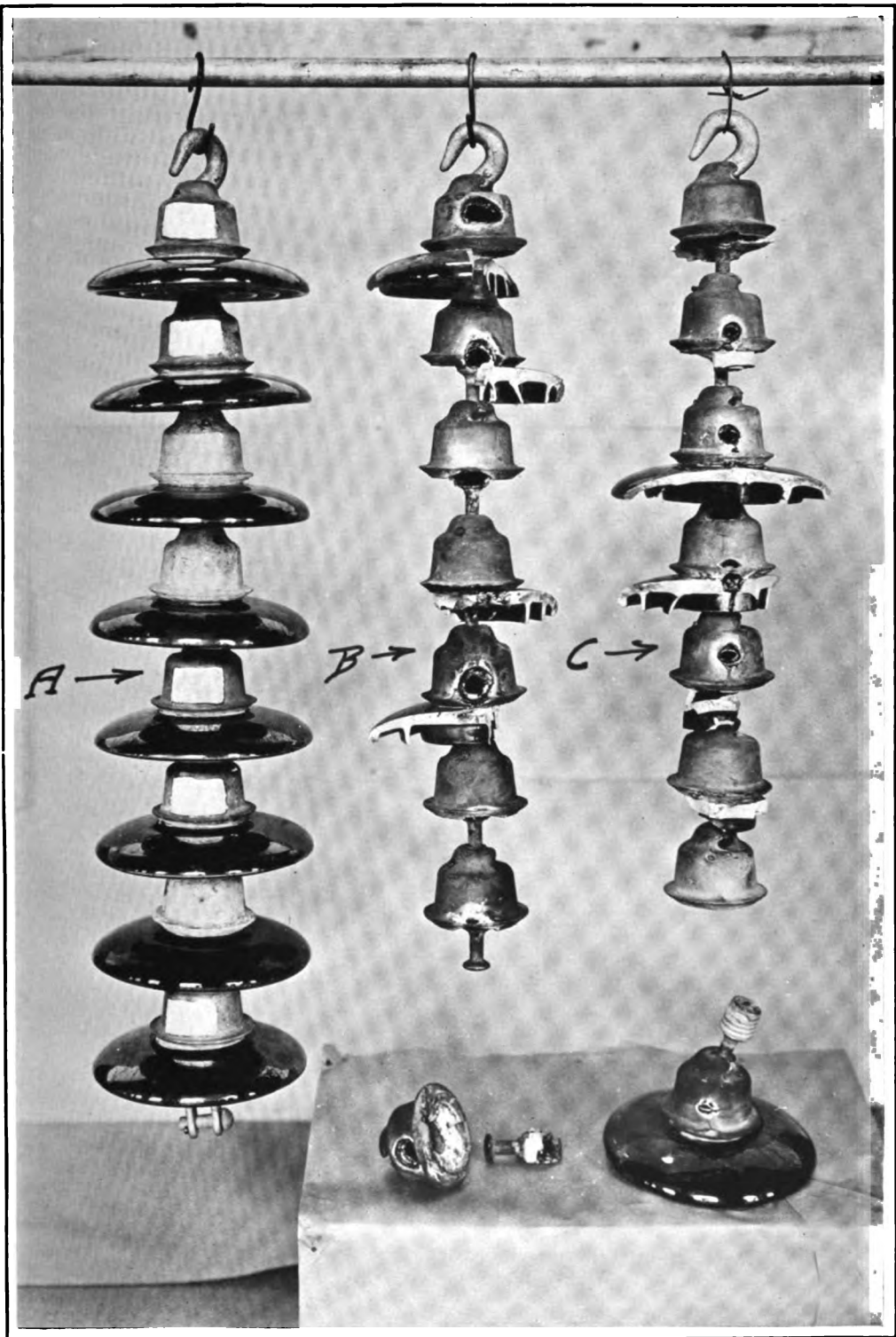
For the benefit of those who are not technically informed with reference to high tension insulators and their performance, let us explain that one of the most serious problems connected with the operation of long distance transmission lines is the location and removal of insulators which have become defective because of what is known as "thermal failure." Thermal failure occurs in suspension type porcelain insulator units, which are made up of both metal and porcelain parts. Expansion of the metal parts upon exposure to extreme heat results in fracture of the porcelain. Electrical resistance of the unit is thus reduced to zero. When enough individual units fail in any one string, flashover occurs across the remaining good insulators and the flow of dynamic current through the defective units destroys them. A short circuit between high tension conductor and tower is thus established.

Operating companies make it a standard practice to periodically test all insulators, especially those at dead end and anchor attachments, and to remove such units as may be found defective. Any unit which has failed because of thermal trouble is of zero resistance and quite easily located.

The Mississippi River Power Company operates two 110,000-volt transmission circuits, carried on a single tower line over a distance of 144 miles between Keokuk and St. Louis. On these two lines 87,000 suspension type insulator units are in service, and of this number 50,000 units are located at dead end and anchor tower attachments.

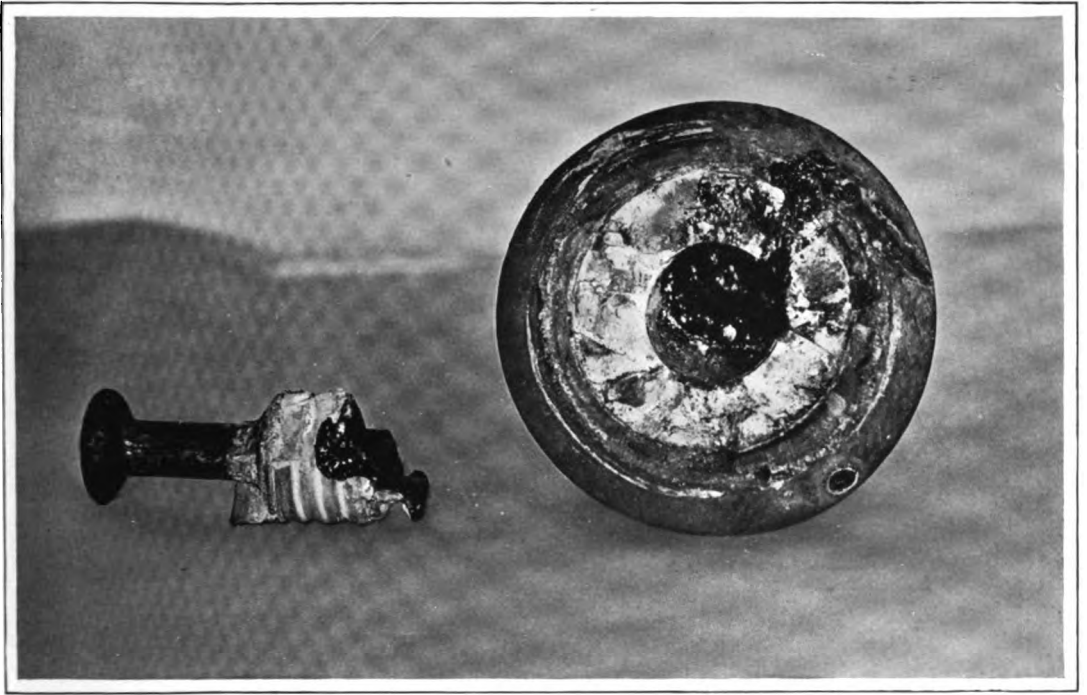
Experience has shown that no matter how thoroughly defective units have been weeded out during the winter and spring months, the first few hot days of summer result in thermal failure of additional insulator units, and if these defective insulators are not immediately located and removed, they become a serious menace to satisfactory line operation. During the present summer season, maximum temperatures at Keokuk did not reach 90° F. until June 12th. On June 16th the thermometer at Keokuk registered a maximum of 92 degrees,

*This article discusses a new and simple device especially suited for locating suspension type insulator units which have become defective. and which can be used to advantage during the night hours.



INSULATOR STRINGS REMOVED FROM ST. LOUIS LINES, JUNE AND JULY, 1919

- A** — String containing five zero resistance units (painted white) located with Keokuk Insulator Tester and removed before trouble occurred.
B — String removed from point near Hulls Substation, June 18th. Failure due to thermal trouble.
C — String removed from Tower No. 968, June 17th. Failure due to thermal trouble.



INSULATOR UNIT WHICH FAILED AT TOWER NO. 968 ON JUNE 17TH
A fine example of what happens when thermal failures are left in service

and on the 17th the first disturbance, due to thermal trouble, occurred on the St. Louis lines. The second serious disturbance developed on the 18th. The trouble on June 17th resulted from the failure of an insulator string at anchor tower No. 968 in St. Louis County, approximately 136 miles from Keokuk. The flashover on the following day was due to the breakdown of an insulator string adjacent to Hulls substation, approximately 51 miles south of Keokuk. Both short circuits were very severe and in each case practically all load on the St. Louis system was momentarily lost, and it was necessary to reduce voltage on the affected line to clear the arc.

These two insulator failures demonstrated very clearly the need for immediate and rapid test of all units at dead end and anchor towers on the two St. Louis lines and the removal of defective insulators before further breakdowns could occur.

During 1916 and previous seasons, it was possible to take out of service one of the St. Louis lines during daylight hours on week days for megger testing of insulators. The amount of energy carried over these two circuits has increased, however, during the last two years to such an extent that at present neither line can be cut out during the week, except at night, without reduction of load, with resultant loss of revenue. Under these conditions, testing which can be done during daylight hours only is limited to Sunday periods.

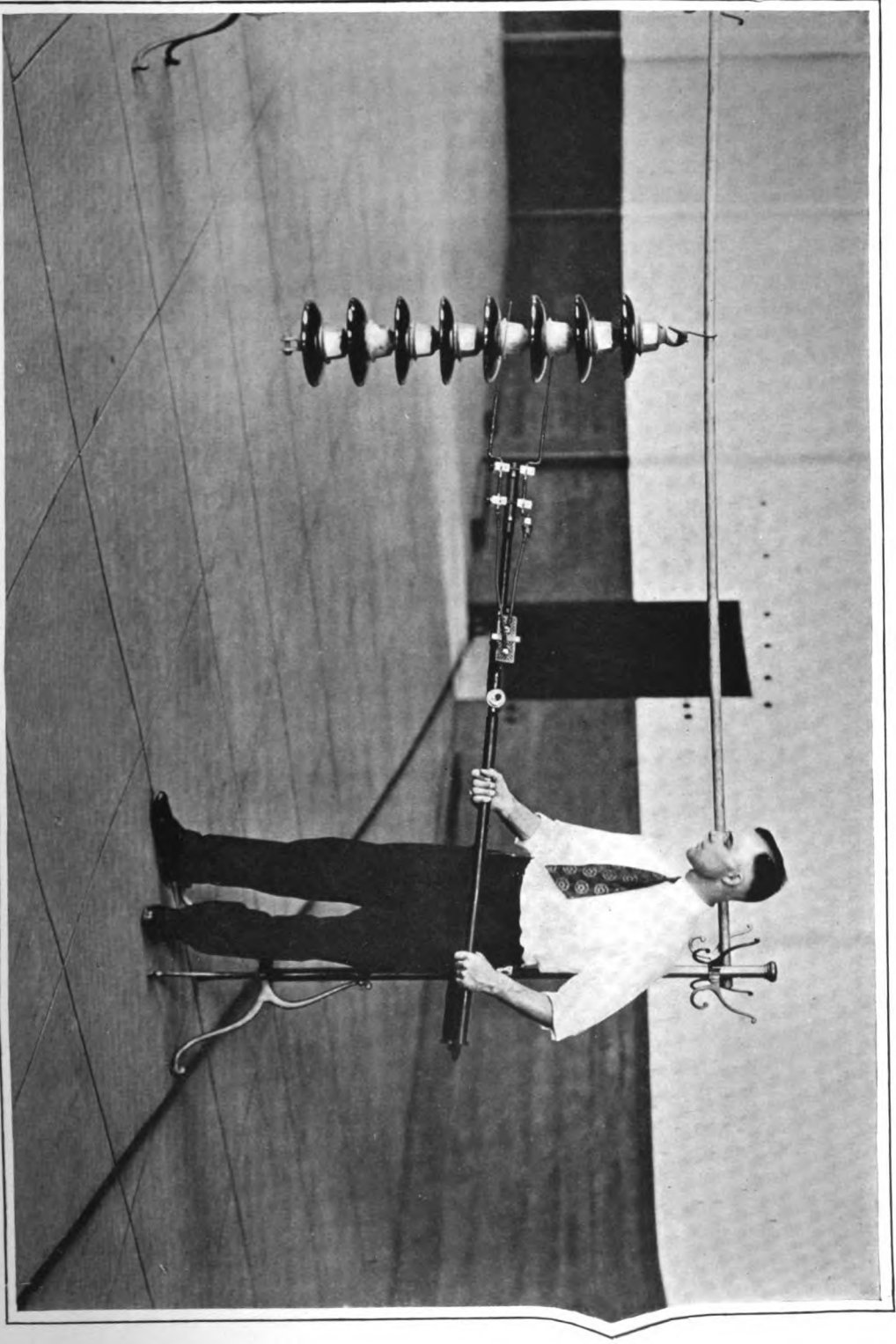
This summer two very serious objections presented themselves to limiting insulator testing to work on Sundays. First, a much longer time, possibly several months, would be required for going over both of the St. Louis lines, and during this interval it would be possible and quite probable for other serious insulator failures to occur. Second, the expense of distributing a number of crews over the St. Louis lines each Sunday for merely one day's work would be excessive, and quite often stormy or rainy weather would make it impossible for them to do anything even after they had arrived on the job. These conditions made it necessary to develop some apparatus which could be used successfully for insulator testing during the night hours, thus permitting the location and removal of defective units to proceed during the entire week at times of light load when circuits could be taken out of service without loss in revenue or inconvenience to customers.

We have had difficulty in using the megger at night, because of dampness, which affects the connections between the

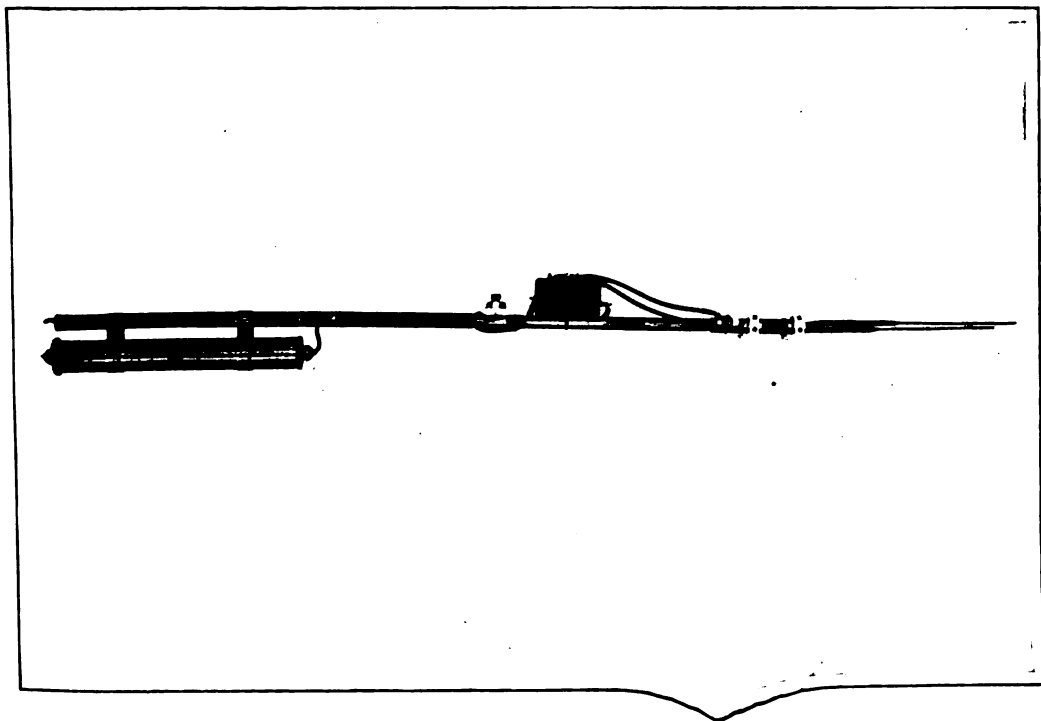
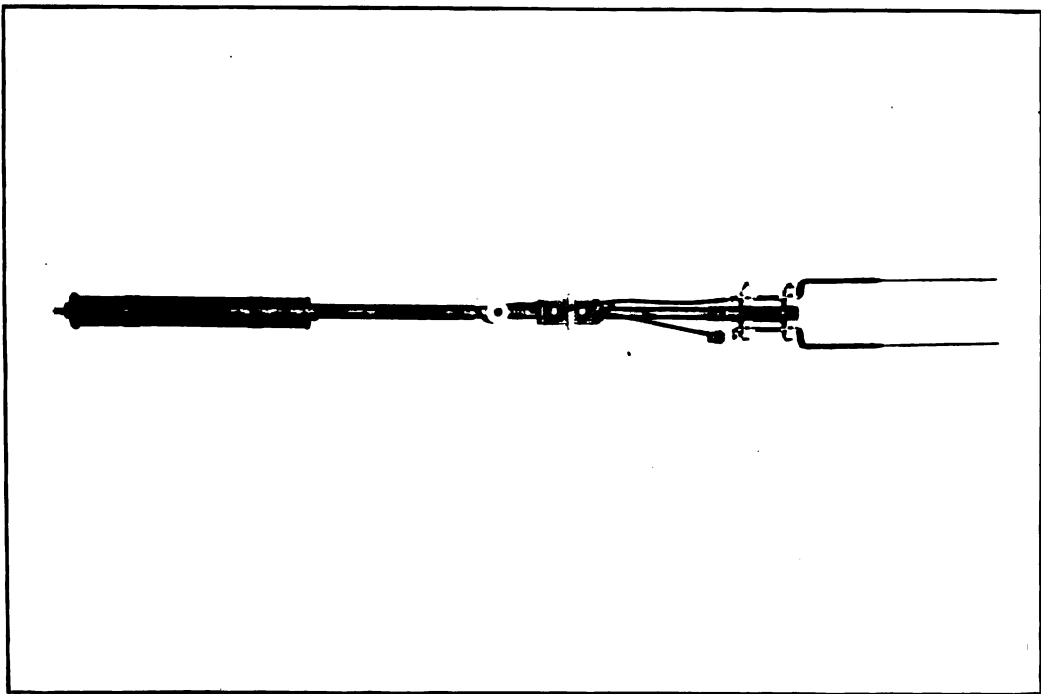
megger fork and the instrument itself and renders resistance readings somewhat unreliable. It was our idea to work out some equipment which would be self-contained in a single testing fork and would not require any long wires connecting the test points to additional equipment on the ground. After trying out several schemes we fitted up a simple piece of testing apparatus, which we have called the Keokuk Insulator Tester. Photographs of this testing fork demonstrate its simplicity, and its construction is shown in detail on our Drawing F-1223, which is also illustrated here.

Upon the handle of the fork is mounted an automobile induction coil, the high tension winding of this coil being directly connected across the two tines of the testing fork, an automobile spark plug being connected in series with this circuit. The low tension winding of the induction coil is connected in series with three dry cells in a container at the handle end of the fork, and in series with this circuit is a 5-ampere snap switch, by means of which the induction coil can be energized during test. This testing fork is not designed for use on live lines, and any circuit on which tests are to be made must be taken out of service and protected before the fork is applied to individual units. When the line is ready for test, the fork is applied to each unit in any insulator string, and in case the unit is of satisfactory resistance, no discharge occurs across the spark gap. Whenever the fork is placed across the metal parts of an insulator unit which has failed due to thermal trouble, and which is of zero resistance, a heavy discharge occurs across the spark gap and in this way the defective insulator is easily located. This apparatus is extremely simple and does not embody any new principles or ideas, — it merely assembles standard apparatus in such a way as to develop a device which is extremely convenient for insulator testing. As compared with more expensive instruments, the cost of the fork is small. No special parts are required which are not easily obtainable upon short notice. One set of batteries will last for a considerable period, depending upon how much testing is done. Our experience has shown that three ordinary dry cells are sufficient for testing several thousand insulator units.

During the period from June 23rd to July 26th of this year, 44,000 insulators at dead end and anchor towers on the Keokuk-St. Louis 110,000-volt lines were successfully tested



METHOD OF APPLYING TEST FORK TO INSULATOR STRING IN TESTING OUT INDIVIDUAL UNITS
Fork weighs 14 pounds complete and is easily handled on tower



KROKUS INSULATOR TESTER

A simple device for locating defective suspension type insulator units

with this device, and 2,087 units, or 4.74%, were found defective and replaced. As many as six testing crews were employed simultaneously during the interval between 10.00 P.M. and 6.00 A.M. An average of between 700 and 1,000 units per crew were tested each night. During the progress of testing, replacements were immediately made in all strings containing three or more defective units.

As soon as both lines had been completely tested, changing crews were put to work during the night hours, covering both circuits and removing all zero units not replaced during tests. In this way the weakest points in the line were first taken care of and routine changing was completed later. Notwithstanding high temperatures during July, no further thermal failures have occurred since the trouble on June 18th.

The present plan is to provide each of our nine patrolmen, who live at sixteen-mile intervals along the St. Louis lines, with a testing fork. Once each week during the hot weather season, each patrolman will test insulators at two anchor towers. In this way any progressive deterioration due to thermal failures will be detected before severe line trouble can develop.

This new apparatus for testing insulators has worked out so well in connection with the maintenance of our transmission system that we felt our experience would be of interest to other operating companies and that possibly this same testing equipment could be used to advantage on other transmission lines.

“THE VICIOUS CIRCLE”

Editor Stone & Webster Journal:

The railroad employees in their appeal for relief from existing conditions have at last recognized an economic law that is as fundamental as the law of gravitation. They have named it “the vicious circle.” They frankly say that increased wages will not cure their ills, because in a short time the cost of living will have advanced so that the relation between wages and cost will be the same. In other words, the great opera of human life will be sung in the key of E instead of C. The orchestra may get the new pitch a little ahead of the chorus, but the chorus will be there strong ultimately; in fact, they may hit F to make up for the time lost, and the orchestra will slide up, too.

The harmonies and rhythm will all be the same, and without a pitch pipe we shall not recognize the difference. Fewer will be able to hit the high solo notes, but the low bass will be stronger.

Labor and capital are the same kind of commodity; their efforts of value are both included in things produced, and it is things produced that move the world.

We have experienced a great world cataclysm, with tremendous destruction of value, and to make it good we have mortgaged the future. Real material things have been destroyed, real material things are required to fill the void — that is, “things produced.”

These things produced to pay back losses are in addition to those for current needs, and are in effect an unavoidable burden upon present and future activities. Each one of us may think there is some golden plan by which we may be the exception and not have to contribute our part; but that is fallacy, we are bound to pay, if not one way, then another.

What has made it difficult for the ordinary man to understand this is the difference in inertia between different elements. When the war broke out there were excess stocks of materials and excess labor supply; prices of both advanced, and the rate was tempered by progressive entrance into the market of stored goods and reserve labor. But on account of the men required for actual war, the labor reserve depleted first and wages outstripped commodity prices temporarily. Commodities had the greater inertia.

As a consequence there was an interim where labor's reward measured in commodities was far greater than ever before, and unskilled labor was able to enjoy the grade of living heretofore only possible to workers of high skill; they liked it and want it to continue.

Unfortunately the same inertia which made the commodity element slow to start, keeps it in motion longer once it is started, so when the men came back from war and the labor reserve began to build up, commodities passed wages on the upward movement, and the temporarily over-fed "duffers" had gradually to slide back toward their old scale of living.

That is what they are complaining of. But up to now their demand has been for shorter hours and more pay. Now, the railroad men see that shorter hours and more pay won't do it except temporarily; that is, only until the other element catches up.

Before the war, a certain amount of productive labor brought the agent a certain amount of living. With the war burden added, is it not reasonable that the same amount of such labor will bring less living? Shorter hours certainly will not bring more, higher wages will not bring more.

"Things produced," then, seem to be the only remedy.

If one of the temporarily over-fed beer drinkers wishes to continue to satisfy his champagne appetite, he must expect to work more hours or more efficiently, perhaps both. In fact, he can not expect even to have his beer, but must take water unless he will produce more than he did in 1914.

It is time for "duffers" to realize that that little taste they got of "high living" was just a fluke, but should be turned to account by them. The way to attain it is to produce enough to earn it over and above the burden of war losses. Travelling round and round the vicious circle will bring them nowhere; it only will make them dizzier.

S. & W. MAN.

HOME VIA THE CANAL

BY ALBERT A. NORTHROP

[This article concludes the diary of Mr. Albert A. Northrop, previous instalments appearing in June and July, 1919. Mr. Northrop spent some months in Uruguay in connection with construction work done by Stone & Webster in that country. He returned late in 1917 to the United States by way of the Straits of Magellan, the West Coast of South America and the Panama Canal.]

Dec. 21, 1917: We leave Iquique by daylight, and in an hour or so drop anchor at the tiny port of Caleta Buena, which means a good little inlet or harbor. Here we are to take on more nitrate, but all day we lie idle, unloading a little hay and grain but receiving no nitrates. We have arrived on a special day of the nitrate workers, so must wait until tomorrow. Ten years ago there was a strike of the nitrate workers which culminated in a threatened "cleaning out" of Iquique by the strikers. They came into town and assembled in the main plaza, where they were met by the soldiers. The officer in command issued an ultimatum that if they did not disperse within an hour he would open fire. Time went by and the strikers would not yield. Ten minutes — five — two. Then the officer made one final appeal and gave them ten minutes more of grace, but of no avail, and at the last tick of the watch the soldiers were ordered to fire. The gatling guns mowed down four hundred of them and the strike was over, but at a terrible cost. There has not been a serious strike from that time to this, but each year the workers resume the strike for a day in memory of that fateful occasion.

Caleta Buena has a cemetery of about seventy graves, perched on the sloping hillside behind the settlement — so you may judge the size of the place. A few hundred, surely not many more, live in the long row of brown houses that appear to be crowding hard against the mountainside to keep from getting drenched from the surf as it breaks on the narrow beach. The houses seem to be holding up their skirts (they are built on stilts) to keep themselves dry. It is certain that people would not stay in such an uncomfortable place were it not that several miles inland there are nitrate "officinas," or properties, and that the railroad from them comes to the brink of the plateau 3,000 feet above (and almost directly overhead) to deliver bags to the ships below. Cable cars, held by steel ropes, lower them down a desperately steep incline, a full car going down pulling up an empty one at the other

end of the cable. Three times a week, we are told, there is a passenger train into the interior. Surely the first part of the travel is thrilling enough, for it is like being hoisted up three times the height of the Eiffel Tower.

This is the nearest the ship has been to these waterless hills, and it is interesting to see how they change in color as the day advances. As water has not carved them into rugged outlines, they are all soft curves of disintegration. The gullies have rounded shoulders, and the crests easy undulations rather than abrupt angles. At the bases of the steeper inclines are heaped in flowing volume the loose material which, without the aid of rain or frost, nature has loosened from above.

In color the gray-browns predominate. These appear more and more reddish-brown as the setting sun nears the horizon. Then the ripples of the water become tiny mirrors, and all the bay from the ship to land reflects in polished color the browns of the mountainside. As the twilight deepens they merge into a velvety softness of grays, which in turn rapidly darken as the sunset fades, and almost before one realizes it the individual parts are lost and only the bold outline of the crests remain silhouetted against the starry sky.

Dec. 23, 1917: Sunday, and we are in Arica, Chile, right under the shoulder of South America where the coast turns sharply from north to northwest. This is the first "valley" town we have seen all the way from Patagonia. All the other towns and cities have been crowded more or less by hills or mountains, hardly allowing them room upon which to stretch themselves without getting their feet wet. Arica, however, has plenty of space, as it is at the end of a broad valley issuing from the hills miles behind. Its harbor is small but snug, being well protected from the south winds and guarded by a Gibraltar-like rock upon which are mounted concealed guns.

Strategically, Arica is important because it marks the extreme north of the nitrate beds, and is the first place in almost a thousand miles of coast line where things grow and where provisions could be secured for the south coast in case of war. It is a quaint, clean little town of perhaps 5,000 — probably less — with its gnarled old pepper trees and its pretty little plaza. The streets are paved with little oval cobbles set on end, which look for all the world like kernels of pop corn on a large scale. One is reminded of the paving in "Spotless Town" of sapolio fame.

It is Sunday morning when we go ashore, and a band is playing in the little plaza in front of the tiny wooden Catholic church. The sidewalks are generously shaded by the beautiful old pepper trees, whose wavy, drooping branches, with bunches of red berries, seem to be swinging in rhythm to the strains of the music. True to custom, the *senoritas* are taking a "paseo," walking around the plaza by twos and threes, while the "Jovens," or eligible young men, stand and watch them or sit on the granite benches while they pass judgment.

We wander up to the market — a clean, open space for carts surrounded by a covered way where the vegetables are for sale. Figs are in season and are delicious. At one table are toy llamas, the native beast of burden of the Andes, covered with vacuna hair, and there is a queer, ungainly little toy horse with knock-knees. From the market we go to a store where general merchandise is for sale, and I get my long-sought-for vacuna fur rug at about half the price I would have had to pay for it farther south.

It is hot in the sun, so we repair to a little restaurant and bath house that is built out over a small and very poor excuse for a beach where some go in bathing. In the restaurant, which opens to the sea, are served all kinds of sea food, including little red miniature lobsters and thorny sea urchins, their own shell making a perfectly good bake and service dish. The place is well filled with a Sabbath morning crowd of English and Chilenos, some with their bath towels in shawl straps, fresh from a swim.

The restaurant is built under the shadow of the cliff which has figured so largely in the history of the bloody war of 1879-1880, when Peru lost this city and all of her nitrate fields to Chile. A battle took place on the summit of the cliff, and the Peruvian forces under Bolognesi, refusing to surrender, were driven, desperately fighting, over the face of the cliff, falling to their death on the rocks beneath or dying a lingering death clinging to the almost perpendicular slope.

The city is the ocean terminus of one of the railway trails to Bolivia and the interior. It is the first of the coast towns at which we have stopped that owns its own water supply. It is said to come from an extinct volcano in the Cordillera, or high mountain range to the East. Wind-mills also are used. Sulphur piled in sacks on the dock, with the tin ore, wool, hides and cotton, hints at an interior of rugged heights, as well as grazing

lands and cultivated fields, for the cotton is the first evidence of the tilling of the soil we have seen for weeks.

Before leaving too far behind the desolate but immensely rich nitrate fields, it will be interesting to see something of that material that has been the bone of contention between Peru and Bolivia on one side, and Chile on the other, and which in the end has lost to Peru all her nitrates and robbed Bolivia of her entire coast as well, making her a virtual dependecia of Chile, who controls all but one of her outlets to the sea.

The nitrate rock is found varying distances back from the coast in the absolutely arid regions. It occurs as an easily crushable white or brown rock, which, after blasting, is crushed and then boiled in huge steam heated tanks. The nitrates and salts are dissolved, only the insoluble impurities remaining. The boiling is continued until the liquor becomes so saturated with the nitrates that the salt is precipitated, for the water prefers the nitrates to the salt and will drop the latter first. The nitrate-laden liquor is run off into cooling vats where it crystallizes as it cools. Then it is shoveled out, drained and dried down to about 2% of moisture. The white crystals, looking like salt, are shoveled into stout sacks of jute, and are then ready for export.

In times past only the richest of the nitrate fields were worked and in the most primitive manner. As each improvement in the manner of treatment and extraction has been invented, the quantity of nitrate available has been multiplied many times over without opening up new fields, or "officinas," as the properties are called. Within the last few months millions of tons more of nitrate have been made available by the Burke process of filters that "squeeze" out all but 1½ to 2% of the nitrate, instead of leaving 7 to 10% behind as in the methods previously used.

An important and valuable by-product of the process is iodine. This accumulates in the "aqua viejq" (old water) used in boiling the nitrates and which is used over again after being drained from the crystallized nitrates. It is extracted by chemical treatment, which causes it to pass off as a hot vapor into cold glazed clay pipes, securely closed. The beautiful violet crystals fasten themselves to the inside of the pipes and are carefully scraped from the interior. For shipping they are rammed with a huge pestle of wood into sturdy little kegs, hardly larger than those used for white lead, so familiar in a paint shop. Although

small, they weigh about 1,000 pounds, and as before mentioned, have a value between \$7.00 and \$8.00 per pound. For shipment the kegs are covered with rawhide with the hair turned inward to protect them from moisture and loss.

Dec. 24, 1917: The day before Christmas, having made a night run from the Chilean port of Arica, we lie off the most southerly Peruvian port of importance, which is called Mollendo. Perched upon a cliff of rock 50 feet above the sea in a most uncomfortable position of rolling hillside, one wonders at the location. We are told that the town should have been farther up the coast, where a relatively good harbor exists, but the railroad became discouraged with the hills and valleys between, and stopped here; hence the town.

It is the seaport of the ancient Inca city of Arequipa, and the only Peruvian outlet of Bolivia to the sea. From here the line climbs to almost 15,000 feet in elevation and skirts the famous Lake Titicaca 14,500 feet high, on an island of which the first Inca king was born as a child of the sun, and, marrying his sister, started a line of kings who ruled a vast empire wisely and well for more than six centuries.

Of Mollendo, itself, "the least said the easiest mended." It has no harbor, though it does boast of a bit of sandy beach lying in a gash of the cliff. Suffice it to say that it has the reputation of being a worse place to disembark than Antofagasta (which is putting it strong), and although it may not be beautiful it is decidedly necessary as a point of transit for the metals, cotton, wool, hides and other products of Peru, on their way to the outside world.

Dec. 25, 1917: Christmas day on the high seas. A Santa Claus, a Christmas tree and paper decorations helped to make the day a real Christmas for the kiddies. For the grown-ups, deck games, Christmas dinner, and in the evening an exhibition Spanish dance by professionals, followed by general dancing on the deck, made the day different from the rest.

Dec. 26, 1917: Early morning finds us in the large and well protected harbor of Callao. It is the most important seaport of all Peru and is the city that has been the port of call for every round-the-Horn sailing ship since the days of the early Spanish explorers. The port is full of shipping and many of the schooners, including one five-masted American vessel, come directly alongside, but the steamers must unload onto lighters out in the harbor. Launches take the passengers ashore to a

landing safer and more quiet than any we have found in five thousand miles of coast.

Callao appears neither savory nor attractive, though no doubt it has its pleasant districts. Perhaps our opinion of it is somewhat biased by the fact that the water of the harbor for five days has been impregnated with sulphur fumes, so that the smell of spoiled eggs is everywhere, and the fish that could not escape to the open sea have been killed. Even the birds have been driven away.

Lima, the capital city of about 150,000 people, is reached from Callao both by steam and electric cars, the fare being 10c by the latter. It is about a thirty-minute ride almost in a straight line directly inland. It is one of the most interesting cities in South America, with traditions that carry one back a thousand years, through the four hundred of Republican and Spanish rule, and the six centuries of the Empire of the Incas. It is near Lima that the immensely wealthy temple of the Inca god was situated, from which great stores of golden vessels were carried to fill the ransom room ten feet high with gold as the ransom to Pizarro for the liberty of the last of the Inca rulers.

The Lima of today reminds one of Mexico City or of Santiago, Chile. Rain seldom falls to wash the brown dust of months from the foliage, and for six winter months of the year the sun seldom is seen through the heavy covering of clouds. The city is situated on the Rimac River, from which water is directed for irrigation. It has a heterogeneous assortment of pavements, the small oval water-worn cobbles predominating. The streets are narrow, and are made to appear even more so by the enclosed overhanging balconies, which project from the second stories of the houses. The water supply is reported inadequate to the present needs of the city, and numerous studies and recommendations for its improvement have been made. The state of progress may be guessed by considering the fact that up to a year ago there were only forty Ford cars in all of Peru, and at present there are but two hundred.

Dec. 27, 1917: Leaving Callao at 8.00 P.M. last evening, fog slows us down to half speed until well into the morning. At about three in the afternoon we come to "Salaverry" in Peru. A handful of houses on the sea side of a rocky hill jutting out into the sea, — nothing more. Back of the houses is a huge hill of sand that rises for hundreds of feet, almost smothering

the lesser rock hills, and climbing half way up the mountain-side. It extends for miles each side, finally tapering off into the sea. Trails up its side can only be traced by tiny specks of pack mules moving so slowly that, from the ship, it is hard to tell that they are moving at all.

A railroad runs from Trujillo (Tro-hee-yo) which can be seen with the glasses a little way up the coast, and brings sugar from the plantations in the interior to form part of our cargo. Salaverry is said to be the port of Trujillo, for, although the latter was founded by Pizarro as a seacoast base, preliminary to his campaign of conquest of the Incas four hundred years ago, still he chose so open a roadstead that shipping is done from Salaverry. It is poor enough, for the water is shallow, as well as affording practically no land protection, and our propellers stir up a black syrup of ill-smelling mud as we come to anchor.

Dec. 28, 1917: At 10.00 last evening we turned south again, heading for the still smaller but much more interesting village of Samanco. Fog delayed us until 1.00 P.M., when it finally lifted, and we turned into the commodious circular bay of Samanco. Although large and seemingly well protected, the wall of hills falls away at several points, and the wind sweeping from the Andes at times forces ships to run for the open sea. This explains why we put out two anchors instead of one. The captain tells us that about four miles to the north, "just around the point," lies the best harbor of all the Peruvian coast, Chimbo, where the navies of the world could anchor with plenty of room for all. As yet, nothing has been done to develop it.

Samanco, with its one Englishman and twenty natives, is reached from the interior by a wagon road, over which the huge brown bags of sugar are hauled for the "British Sugar Companies, Ltd.," by six-horse teams. Somewhere near is an Inca burying ground. Sand, a few green bushes, and ragged rocks in the foreground, with a background of the bare ranges of the Andes rising one behind the other until they are lost in the clouds and the distance — such is the view from the ship. Overhead pelicans circle slowly, or, descending to the water, skim over the surface. They always go in single file, alternately flapping ponderously, or sailing with wide-stretched wings — following the example of their leader.

We are in the region of the Guano Islands, where the

chemistry of the birds that we see skimming the ocean or diving headlong after fish has given to Peru and to the world a tremendous store of fertilizer. The Peruvian Corporation alone has the right to take two million tons of guano, and we are told are removing it at the rate of about 100,000 tons per year. Notwithstanding such tremendous depletions of the supply, it is estimated that the yearly deposits amount to about 60,000 tons.

Dec. 30, 1917: Again we have doubled back on our course and are only five or six hours from Callao, the port that we left four days ago. We first went north to take on sugar so that it could be stowed below the cotton which we received at Supe. The reason is that much molasses drips from the unrefined sugar. This will not injure the tin and antimony stowed below, but would injure the cotton. Owing to a fog we get lost. When the fog lifts we cannot identify the coast, and it is necessary to get our observation on the sun before we can determine to go north or south. We finally reach Supe about three in the afternoon after much scouting.

Dec. 31, 1917: The town lies about midway of a long stretch of irrigated land paralleling the sea coast. It was here that Chimu tribes cultivated the soil centuries before the Spanish invasion. Evidences of their burying grounds are still visible, and on a rocky point jutting out into the sea tradition locates an old Inca castle and fortress.

The lighters are ready, loaded with cotton, for we have been expected for many days. One lighter in particular, white with bird lime, has been loaded two and one-half months, as the last trans-Atlantic ship that called could not find room for it. While loading, an Indian comes on board with Panama hats for sale and succeeds in selling a few, for it is known that we shall not call at Payta, where they are usually brought on for sale.

Jan. 1, 1918: We were loaded yesterday by three, but waited two hours more for an important letter that was being dispatched from Callao. It was coming by special messenger, first by train to Huacho, and then by auto and horseback over the newly constructed highway from Huacho to Supe. Before the old year dies we are at last actually on our way north with a full cargo, twenty days after leaving Valparaiso.

Last night for miles we ran through flocks of birds sleeping on the water. We heard them, when disturbed, rush off with a

peculiar pattering sound as, half flying and half running, their feet hit the water.

Jan. 2, 1918: For miles we ran through masses of dark wine red which made the sea near the boat look like blood. The captain called it whale sperm, which is supposed to come from the whales. Others called it whale food. It is apparently a mass of minute animal or vegetable matter.

Jan. 3, 1918: The Equator is crossed and we are in the Doldrums. It is the region ten degrees either side of the Equator where there are calms, or fitful breezes, but no steady winds. The sea appears oily. Flying fish begin to be seen.

Jan. 4, 1918: We have struck the Northern Trades again, and the sea is very choppy, but it is comfortably cool on deck. In fact, we have had hardly an uncomfortably hot day since we started. We sight Cape Malalight, on the west side of the Gulf of Panama, at 10.00 P.M.

Jan. 5, 1918: Early in the morning we sight land. How good it looks to all of us to see trees again, and such luxuriant trees! We eagerly poke our heads through port holes to catch a glimpse of the thickly wooded islands. On deck, a man standing near is drinking in the scene and says with a sigh, "Well, it *is* true, then. Things really grow somewhere after all." He had just come from eleven years of the arid deserts of the Chile nitrate fields, where things do *not* grow except with the utmost coaxing and care.

By 8.00 o'clock a snappy little gasoline launch comes alongside flying Old Glory, and we take our pilot on board. Shortly afterward, another launch brings us the port doctor, and we all assemble in the library for a very brief inspection. Under the guidance of the pilot, we pass through the gap in a submarine net stretched across the channel, make a wide circle in the apparently innocent waters of the bay, and finally head straight for the canal.

On our right we pass islands, connected to the mainland by a breakwater. Back of them on the mainland lies the old town of Panama, from which the freebooter Morgan used 176 horses to carry away the booty of gold, silver and other treasure, when he sacked and burned the city in the seventeenth century. The new town of Balboa lies closer to the canal and is located much higher up.

Now we are fairly in the canal, and the low, marshy banks rise only a few feet above the water. As we approach the higher

ground the Miraflores locks bar the passage. Here we are taken in tow by electric locomotives running alongside. One on each side pulls ahead, while two on either side take a strain backward and stop us before we reach the lock gate. We are entirely within their control and do not use our own power.

Once inside, the gates behind us swing shut and we begin to rise. Up we come a foot every twenty seconds, so that in less than seven minutes our twenty-five or thirty thousand tons of bulk have been raised about thirty-five feet. As silently as before the gates before us swing apart and we move into the second lock. Once more we are lifted another thirty feet above the sea as quietly and as easily as if our weight were that of a feather instead of more than sixty millions of pounds.

The upper level reached, we again go under our own power to the Pedro Megil lock, which brings us to the highest level, eighty-five feet above the ocean below. Almost immediately we see the red walls of the Culebra Cut in the distance. A nearer view shows us that the red scar we first sighted is the top of a vertical face left by one of the huge slides that have caused so much trouble and delay in breaking through this, the backbone of the continent. Even as we pass, a crowd of drillers are perched atop one of the slides to break up the rock, while two "Giant" streams of water are hydraulicking the broken material down into the canal, where it can be picked up by floating dredges and carried away.

As we leave the shadows of Culebra behind us, we steam through the uplands with the well-defined rock slides to the canal, and finally come out into the extensive lake that the Gatun dam at the Atlantic side has made of that very unruly stream, the Chagres River. The captain from the bridge signals "full speed ahead," and away we go — heading northwest for the Gatun locks. Here and there protruding from the lake surface are dead tree tops, telling of a tropical forest once growing where the lake now is.

At the end of the lake the ship descends the three huge water steps at Gatun as easily as it has ascended, and in a surprisingly short time we are down off the plateau and on our way into the Atlantic.

Everyone is impressed with the smoothness and lack of confusion with which the locks are operated, and we are told that in the operating tower is a model performing in miniature all the operations of the gates. Even our ship is shown, and the

operator at the control board can see at a glance from the model all that is happening.

We entered the canal from the Pacific at 10.00 A.M., and at 5.00 P.M. are tied up alongside at the coal docks of Colon in the Atlantic.

Everyone is eager to go ashore, and after much vexatious delay, the blame for which we one and all unanimously lay upon the shoulders of the ship company's agent ashore, we reach land in the company's launch about 9.00 P.M. We are just in time to get in the cable office before its closing to send messages to our friends and tell them that the reason we have not reached the United States is that we have been twenty-six days picking up a war cargo along the coast of Chile and Peru.

The shops are still open and are simply fascinating with their windows full of wares from India, China and Japan. Embroidered silk kimonos, carved ivory, Indian work of beaten gold and silver, Panama hats, silk pajamas, and a thousand other things at prices which the smiling shop keeper from Burmah or Siam confidentially assures you he would offer only to you because you are going away on a ship and will not spread the news that he has sold to you so cheaply. "So very cheaply that it is almost at a loss."

Our purchases over, we follow the advice of the shop keeper and go to "Tom Booze's place" for a dish of real United States ice cream. It is really not so bad as it sounds, for Tom Booze is the very able secretary of the Y. M. C. A. We find the rooms well filled with soldiers and sailors, who are evidently enjoying themselves.

With but fifteen minutes left before our launch goes off to the ship we jump into a carriage and drive to the Washington Hotel. After a glimpse of naval officers in spotless white dancing with very good looking young American girls, an attractive dining room and cool looking green furniture in the lobby, we step into our waiting carriage and in a few minutes are on the launch headed for the ship, which we reach shortly after 11.00 P.M.

Jan. 6, 1918: We were due to sail at 6.00 P.M., but a rope caught in the propeller delays us until noon while a diver goes down and disentangles it. By 1.00 P.M. we are standing out beyond the breakwater, at last really headed toward home. Before losing land entirely we pass the famous Buccaneer's Retreat of Puerto Bello, where Morgan started across the

Isthmus to sack Panama, and where later the "Forty-Niners" landed on their way across the Isthmus to fortune in California.

Jan. 7, 1918: Our course is not given out, but we apparently are headed northeast, which will bring us somewhere east of Cuba. The day is hot.

Jan. 8, 1918: Late in the afternoon we sight the islands of Santo Domingo and Hayti. The heavily-timbered mountains appear to rise abruptly from the sea, hardly leaving room for the two little towns we can see on the shore, their white walls and red roofs standing out in contrast to the blue of the ocean and the dark green of the forest beyond the above.

Jan. 9, 1918: This is our last day of Palm Beach suits and summer clothes. The air is delightfully soft and sunny, but with the least bit of a tang to it, to emphasize the fact that today we cross the Tropic of Cancer and leave the tropics behind us. About 6.00 in the afternoon we see the island of San Salvador off to the west, bathed in the golden light of the setting sun. It was here that Columbus first discovered land, and a balmy pleasant land it must have seemed to him.

Jan. 10, 1918: Since leaving the canal we have darkened ship so that not a single light shows from the outside. Oil lamps have been put in the corridors, because a torpedo explosion might destroy the electric motors. The lower decks would then be in total darkness except for the lamps. Each passenger has been assigned to a particular life boat, and has been given a card instructing one just what to do in case the siren blows the danger signal. Each of the boats holds fifty-seven passengers, and as there are hardly enough passengers aboard to fill one boat, there will be no crowding. Today the sailors are overhauling them, rigging sails and getting them all in order.

Jan. 11, 1918: Today is Gulf Stream and Cape Hatteras day. The weather is mild and summer clothes are comfortable, although wireless reports tell of zero weather on land. During the night we alter our course, and steer straight west into the hollow of the waves for Hampton Roads.

The sea sweeps over the ship, crashing down upon the decks, and finally one wave finds an open ventilator on the deck above. Instantly a deluge of water comes flooding down into the cabin. By the greatest good fortune, it does very little damage. About a half inch of water splashes into my handbag, which is packed, ready for our departure, but misses the baby,

the trunks and my open suit case. The ship behaves splendidly, and by morning we are safely anchored in Hampton Roads.

Jan. 12, 1918: The bay is full of ships, and for the first time we see camouflage. Many ships are painted all over with broad, wavy bands, some white, some gray, some black, and look as if they were at some masquerade party instead of on the serious life and death work of running the submarine blockade to help keep the Allies supplied.

It is Saturday morning and to the great annoyance of everyone the quarantine doctor fails to come aboard. Hour after hour we are forced to wait while the chance of spending Sunday at home grows less and less. Finally, about six or seven hours after we have dropped anchor, he puts in his appearance, and to the captain's protest remarks that we ought to be thankful that he came at all. Needless to say, we have definite opinions about that doctor not altogether complimentary, especially as the Englishmen aboard do not hesitate to rub it in about "American Efficiency."

The combination of the doctor's delay and a Saturday afternoon are too much, so when we arrive at Newport News about 4.00 P.M., even the repeated shriek of our powerful siren fails to produce any officials. The day is wasted, and we go to bed in our ice-cold cabins thoroughly disgusted. Incidentally, it is fifteen degrees above zero and we have just come from the tropics.

Jan. 13, 1918: Sunday on board ship instead of Sunday at home, thanks to that cursed quarantine doctor. We are not able to telegraph our arrival to our friends, nor do anything but watch the endless ebb and flow of the thick fields of ice pass the ship.

Jan. 14, 1918: Late Monday morning a launch puts out and brings the customs officials to the ship. It is a sorely tried lot of passengers that they have to inspect, and their temper is not improved when we are told that no provision has been made to take us ashore.

At about three in the afternoon the launch returns, to our joy, and offers to take us all ashore. Trunks are hastily swung aboard, and we all eagerly file down the stairway to the little boat.

The ice is running out in thick floes. With much bumping and pounding we slowly work our way up stream. As we turn in to make the landing stage the ice becomes more and more

compact, and finally, with about twenty feet to go to reach quiet water, the gasoline engine gives a final cough and comes to a standstill.

Locked in the grip of the fast freezing mush ice, we are borne helplessly down stream, past the sterns of ships tied up to the docks, unable to move forward a foot. Finally the engine is started in reverse and we push our way back through the path we have made until we are in mid-stream once more. The situation looks almost helpless, when way down stream we see an Old Dominion side-wheeler plowing up through the ice. We swing in behind her and are able to make good speed in her well-beaten path.

Again we try, and this time succeed in forcing our way into the stationary ice jammed between the docks. Slowly, almost inch by inch, we push ahead, and with almost our last gallon of gasoline gone we crowd alongside the dock, and our journey of eleven thousand five hundred miles is over.

ELECTRICITY IN POULTRY RAISING

BY E. A. TAYLOR

Until recent years poultry raising was confined to small flocks. Everybody conceded this was a losing game, and poultry papers always advocated the keeping of poultry in small flocks, of from ten to twenty, in a coop for the most number of eggs. A commercial poultry plant was something entirely unheard of, and the great numbers of eggs consumed in the large cities were gathered together through the country store, brought in perhaps in dozen lots and traded for provision. The housewife of the farmer usually was at the head of the poultry department, and the hen that laid one hundred eggs per year was the talk and envy of farmers' wives for miles around.

It remained for the poultry fancier to evolve from the various varieties a hen that has revolutionized the poultry business. This is the white Leghorn. Not until a stranger arrived in Petaluma, California, with a flock of these birds and established a commercial plant for the large white eggs, was much attention given to this variety. The breed was much handicapped by the colorless egg. The market preferred the brown egg, and still does, but the Leghorn's white egg has been forced upon the market and has been accepted.

Housing in small numbers has been overcome, since numbers seem to make no difference with the white Leghorn.

The success attained by this Petaluma pioneer became known, the town and country around soon became infected with the germ, and Petaluma is known the world over as the white Leghorn home.

The idea of large flocks soon spread, and to the Puget Sound country came the white Leghorn, and Whatcom County has her full quota of large plants, where eggs are hauled to train or boat by motor trucks instead of in baskets as of old.

With the development of the incubator and the fact that the Leghorns are not setters, came the demand for baby chicks, and this demand has grown to such an extent that the large hatchers are unable to fill more than a small portion of their orders. One poultryman, Mr. Hawley of Bellingham, a specialist in baby chicks, has two incubators each having a capacity of eight thousand eggs, and was unable to fill his orders.

In and about the pretty town of Lynden is centered perhaps some of the largest plants; Mr. Herman Oort, perhaps, has the largest plant, but there are hundreds of others fast coming to the front. Mr. Oort has a most wonderfully arranged plant, which is in itself a poultry city. His plant is equipped throughout with electricity, from pumping the water to incubating, brooding and the lighting of the plant. Mr. Oort is a large shipper of day-old chicks as well as eggs. His incubator capacity is nine thousand eggs, and during the past spring he hatched in the neighborhood of 3,000 chicks.

The houses of this plant are twenty feet wide and some of them several hundred feet in length, all electrically lighted, so that during the short days of winter the hens continue their activities as during the longer days of summer. The coops are all kept absolutely clean, a pony and cart being used to haul away the droppings. This pony goes the rounds each day and knows the routine thoroughly. Mr. Oort tells of a new man he had hired, who, when told to clean the coops, asked, "Where will I begin?" Mr. Oort simply told him to follow the pony. Mr. Oort has two sons who were raised with the chickens. He says that when the boys were small they helped him; now he helps the boys.

This plant is known as the Lynden Poultry Yards and consists of twenty acres devoted entirely to the poultry, either in runs or the raising of green fodder, such as kale, for winter use. System in the management and standardization of housing and feeding have brought this commercial poultry plant to successful attainment.

Mr. Oort is a booster for electricity. In hatching he states that the expense is some 20% less with electricity than by using coal oil. In brooding he used electric hovers, producing an even temperature under the hovers and eliminating the danger of fire, which has been so frequent with breeders who use the oil stoves. Many have not only lost their brooder houses and chicks but their entire plant as well.

There are some twenty of the poultrymen in and about Lynden who are using electricity, and all are of the opinion that electricity for the commercial poultry plant is indispensable. Many breeders who are remote from electric lines lament that they are not located where the juice is available.

The lighting, morning and evening, of the poultry houses during the winter months has been advocated by Mr. Shoupe

of the experimental station at Puyallup, who, prior to taking up the work there, conducted one of the large plants in Whatcom County, lighting the coops with gasoline burning lanterns.

In and about Bellingham are many plants that use electricity for the lighting of their laying coops.

BUSINESS CONDITIONS IN STONE & WEBSTER LOCALITIES

The managers of the companies operated by Stone & Webster write to the Management Division of Stone & Webster about the first of each month with reference to business conditions in their respective localities during the preceding month. A digest of these letters is published each month in the Stone & Webster Journal.

Baton Rouge, La., July 16th:

Building permits for June, 1919, were valued at \$88,689, against \$28,496 last year.

The number of employees at the Standard Oil Company in June, 1919, was 2,640, against 2,225 last year.

The general prosperous condition of the past few months continues. New building permits for the month of June were the largest in the history of the city, totalling 61, most of which are for residences. The Aluminum Ore Company's papers covering the purchase of land near the plant of the Standard Oil Company have been accepted, and business men are now looking forward to the time when they will start operation. The number of employees at the Standard Oil Company is still increasing, this month being the largest in the history of the company. Now that the rain has apparently ceased the farmers have begun to work on their sugar cane and are looking forward to a comparatively good crop.

The railway, light and power and the gas receipts of Baton Rouge Electric Company for June, 1919, all show satisfactory increase over last year.

Our commercial power metered represents the largest in the history of the company. The railway receipts continue to show a handsome increase, and the company has been obliged the past month to run extra cars in order to take care of baseball games. Indications all point to a continued increase in the demands for gas services. There does not seem to be any letup in the building program, and the contractors report that they have enough business to keep them going for some months to come.

Beaumont, Texas, July 16th:

Bank clearings at Beaumont for June, 1919, were \$5,228,325, against \$5,541,248 last year.

During June, 1919, 18 building permits were issued at Beaumont, valued at \$161,180, against 86 last year, valued at \$189,175. At Port Arthur 17 permits were issued, valued at \$4,755, against 21 last year, valued at \$16,835.

Post office receipts at Beaumont for the quarter ended June 30, 1919, were \$48,732, against \$12,747 last year. At Port Arthur post office receipts for the quarter were \$14,737, against \$4,403 last year.

The general business outlook in this section is very good. Business is active in all lines, with plenty of employment, and the general public

is purchasing freely. Business men, as a rule, are expecting increases in prices instead of the declines which were looked for several months ago.

Export business from this port continues good, and construction is growing in volume, June showing the largest number of building permits for many months.

The wet weather which was prevalent in May continued through the greater part of June, with a bad effect on growing crops. It is thought, however, that if normal weather continues for the next two months, there will be no permanent injury to the crops.

During June, 1919, the lighting receipts of our company showed an increase of about 4% over last year, and the railway receipts an increase of 22%.

Bellingham, Wash., July 15th:

Building permits at Bellingham for June, 1919, were valued at \$57,797, against \$10,677 last year.

Post office receipts at Bellingham for June, 1919, were \$7,046, against \$8,026 last year.

General business conditions are practically unchanged, though merchants report a much heavier volume of business than a year ago.

A recent school census shows an increase of 3% in the number of pupils over last year. This would seem to indicate that the city of Bellingham now has a population of 39,460.

The lumber market is holding up well. Prices have had several advances, and even at present figures the operators estimate that there will be a continuous demand for the next two years.

Even with the high prices of labor and materials there is considerable activity in the building line. The shortage of houses has forced building even under these extraordinary conditions.

Several large contracts for road improvements have been let and at unusually high prices.

The weather has been exceedingly fine for fruits and berries, and they are bringing high prices. The crops in Skagit County are also doing well, particularly the hay crop, and farmers have taken advantage of the high prices.

Receipts of the city lines showed an increase of 22% over last year, though last year's receipts covered a large number of passengers to and from the shipyards, which this year are closed down. Passenger receipts on the interurban show an increase of 17%, due to improved conditions in Skagit County. Freight receipts on the interurban are the largest in the line's history. Light and power receipts show an increase. Gas receipts also show an increase.

Columbus, Ga., July 19th:

Bank clearings for June, 1919, were \$4,207,934, against \$2,579,548 last year.

During June, 1919, 10 building permits were issued, valued at \$47,450, against none last year.

Post office receipts for June, 1919, were \$10,507, against \$9,534 last year.

Retail business during the month of June showed a rapid and consistent gain. There is evidence on every hand that the city's population and buying capacity have grown very rapidly during the past few months. The recent order to discontinue work on Fort Benning has, of course, had an adverse effect, but the city's growth is not all due to camp construction, and there is an optimistic feeling that whether or not Fort Benning is completed, Columbus is destined to witness a rapid advance in business and building operations.

The large manufacturing concerns have plenty of orders in view, insuring a steady operation, and at present labor conditions are fairly good.

The railway receipts of the Columbus Railroad Company for June, 1919, show a handsome gain over last year, and this is likewise the case with the light and power receipts.

The receipts of the Gas Light Company of Columbus also show a very satisfactory increase over last year.

El Paso, Texas, July 5th:

Bank clearings for June, 1919, were \$25,166,362, against \$17,994,813 last year.

During June, 1919, 97 building permits were issued, valued at \$221,297, against 87 last year, valued at \$58,727.

Until a change has been effected in Mexican conditions, a large trade with that country cannot be expected. However, should it be demonstrated that American life and property in Mexico will be safeguarded, trade relations, it is believed, will be rapidly extended. Our trade territory has been appreciably diminished by the destruction of portions of the railroads in the interior of Mexico by the rebel forces.

Our railway receipts for June, 1919, show satisfactory increase over last year.

Everett, Wash., July 15th:

During June, 1919, 85 building permits were issued, valued at \$68,350, against 61 last year, valued at \$27,900. Of the 85 issued last month 20 were for residences.

Prices in the lumber and shingle industry are even higher than they were a month ago, and they were then the highest known in the history of this industry. It is said that stocks of lumber on hand at the mills have never been so low, and that mills are filling a great number of their orders from current cut. There is also indication of a car shortage.

Fall River, Mass., July 8th:

Bank clearings for June, 1919, were \$10,277,940, against \$8,668,287 last year.

During June, 1919, 62 building permits were issued, against 32 last year.

The general business outlook for the next few months seems to be very satisfactory. Notwithstanding the high cost of living, the people appear to be saving more money than ever before, the savings banks having increased their deposits by \$2,000,000 already this year.

The cotton business continues good, with sufficiently large sales to give promise of keeping the mills running for a considerable time in the future.

Fort Madison, Iowa, July 11th:

Bank clearings for June, 1919, were \$2,028,000, against \$1,650,685 last year.

Post office receipts for June, 1919, were \$10,247, against \$9,137 last year.

The local payroll of the Santa Fe Railroad for June, 1919, was \$156,000, against \$191,734 in May, 1919.

The weather for the past month has been unusually warm, the condition being very favorable for the harvest of the winter crops.

The Fort Madison Street Railway Company carried 152,800 cash passengers during June, 1919, compared with 63,700 in June last year, an increase of 61%.

Fort Worth, Texas, July 3rd:

Bank clearings for June, 1919, were \$62,081,394, against \$48,017,553 last year.

During June, 1919, 212 building permits were issued, valued at \$750,563, against 71 last year, valued at \$242,985.

The large bank clearings shown above may be attributed to the thousands of new accounts resulting from oil production in this vicinity.

Stockyards receipts for June were as follows:

	1918	1919
Cattle	104,021	82,316
Calves	19,557	16,151
Hogs	19,372	28,385
Sheep	56,040	47,555
Horses and mules	543	2,001

General business conditions look very encouraging for the immediate future. One of the largest wheat crops ever grown in this vicinity is now being harvested. The quality of the wheat will be somewhat impaired, owing to an unusual number of hard rains, which have interfered with the harvest.

The Ranger and Burkburnett oil fields continue to flourish.

Passenger receipts on the interurban division show an increase of 29% over last year, and those of the city lines an increase of 3.1%.

The Dallas State Fair, which is to be held in October for the first time in two years, promises to be the largest in the history of the Fair Association.

General business conditions in Cleburne are practically unchanged.

Galveston, Texas, July 7th:

Bank clearings for June, 1919, were \$26,279,000, against \$15,875,551 last year.

The volume of business for June, 1919, was \$105,981,000, against \$76,831,000 last year.

During June, 1919, 453 building permits were issued, valued at \$91,914, against 304 last year, valued at \$15,011.

Galveston's shipping business, as indicated by the activities on the wharf front, at the cotton compresses, and in the offices of steamship and forwarding agencies, presents more nearly a normal appearance than for several years. The consensus of opinion is that the port's business is far heavier this season than ever before, and that this condition will continue throughout the summer.

As the movement of the new cotton crop will begin about the middle of August, and as the new wheat crop is already moving, the cargoes booked for export now loading, together with a number of vessels due at an early date, are expected to furnish enough impetus to carry the existing gratifying rush of business well through to the first movement of new crop cotton.

The rapid expansion of America's merchant marine and the substantial increase in shipping at the Port of Galveston are the outstanding features of the tonnage report for the month of June, compiled by the local customs officials. Of 66 vessels entering the Port of Galveston in foreign trade in June, with a total tonnage of 119,223, 45 flew the American flag. This is an increase over May of 13 American vessels and an increase in total foreign trade tonnage through the port of 48,436.

The foreign vessels entering the port in foreign trade represented an aggregate tonnage of 56,463. Sixty vessels cleared in foreign trade direct, of which 40 were American. Total tonnage clearing from the port in foreign trade amounted to 108,991, representing an increase of 12 vessels over the month previous.

More rain fell in Galveston during June, 1919, than in any other June since the establishment of the Weather Bureau here.

Thirteen conventions were held in Galveston during June.

The railway receipts of the Galveston Electric Company for June, 1919, show an increase of 8.7% over last year, and the lighting receipts an increase of 51.6%.

Haverhill, Mass., July 14th:

Savings bank deposits June 30, 1919, were \$14,900,304, against \$13,847,220 last year.

During June, 1919, 27 building permits were issued, valued at \$171,300, against 12 last year, valued at \$39,425.

General business conditions have not changed materially during the past month.

Houghton, Mich., July 10th:

It is the general opinion that the tide has turned in the copper mining industry, and that from now on conditions at the local mines will show steady improvement. Early in July the Calumet & Hecla announced that it would re-employ all underground men who had been laid off during the past few months. Practically all the other mines in the district are likewise employing all the labor they can secure. It is expected that between now and the end of the year large numbers of men who have left

this district will return to their old positions with the mining companies. Outputs of the various mining companies should gradually return to normal, and with further improvement in the price of copper, no doubt some of the mines which closed down early in the year will reopen.

With the improvement in the copper situation the outlook for general business in this territory shows a marked improvement.

Houston, Texas, July 9th:

Bank clearings for June, 1919, were \$74,448,399, against \$47,233,158 last year.

During June, 1919, 347 building permits were issued, valued at \$598,552, against 174 last year, valued at \$125,656.

Real estate transfers for June, 1919, were \$1,688,793, against \$6,860,946 last year.

The unusual building activity and the heavy increase in the resources of the banks indicate, it is believed, that the wave of prosperity is no mere flash in the pan. That the unusual business activity is due to reaction after the war is true to some extent, but the principal reason for it is the opening of the ship channel, with a great number of oil refineries and manufacturing plants that have been established here in the past eighteen months.

The cotton men state that the movement of cotton has been more than the warehouses and compresses could handle, causing some congestion in shipment. This has, consequently, slowed up the movement of this commodity, and it is, therefore, likely that considerable cotton will be sold and shipped during the month of July.

While the merchants, real estate men and manufacturing concerns have been enjoying unprecedented prosperity, the farmers in this region report that crops are in bad condition. The month of June was the coolest and wettest on record, the total rainfall being 15.85 inches. A number of farmers had their crops flooded, and practically destroyed, and such crops as were not flooded have gotten into bad condition on account of weeds and the lack of farm labor. It is reported that what cotton has been saved from this locality is being taken by the boll weevil.

Live stock is in fair condition, and steady shipments of fat stock to the various markets are reported.

Real estate dealers and building contractors state that they are experiencing a phenomenal business. In view of the great number of building permits issued during June and according to the statements of the contractors, they will have all the work they can handle through July and for some time to come.

The receipts of the Houston Electric Company for June, 1919, show an increase of 11% over last year, and those of the Galveston-Houston Electric Railway Company an increase of 10.5%.

Keokuk, Iowa, July 2nd:

General business conditions continue to show a large improvement over last year.

The new factory building at Hamilton, Illinois, in which will be

manufactured inner linings for automobile tires, is going up rapidly and will soon be ready for the installation of machinery.

The wheat crop in this section is unusually good and larger than ever before. The weather during June was very favorable to rapid growth and early maturing of wheat. Many stalks have been found over six feet high, and some have been exhibited over seven feet high. In spite of its large size the wheat is standing up well and ripening very rapidly.

The railway, electric light and power receipts of the Keokuk Electric Company for June, 1919, show substantial increases over the previous year.

Key West, Fla., July 3rd:

Customs receipts for June, 1919, were \$75,816, against \$83,558 last year.

The cigar output for June, 1919, was 5,899,423 cigars, against 6,808,695 last year.

The cigar manufacturers are no longer experiencing difficulties in getting shipments of material from Cuba, and are now working on good size orders.

Merchants and other business people are very optimistic over the outlook for the immediate future.

Both the railway and lighting receipts of The Key West Electric Company for June, 1919, show increase over last year.

Lowell, Mass., July 31st:

Bank clearings for June, 1919, were \$4,337,809, against \$5,084,932 last year.

During June, 1919, 111 building permits were issued, valued at \$594,545, against 62 last year, valued at \$173,660.

There appears to have been no marked change in the general business situation since a month ago.

Very satisfactory increases may be noted in all the operating receipts of our companies compared with a year ago.

Paducah, Ky., July 7th:

Bank clearings for June, 1919, were \$7,153,181, against \$5,934,577 last year. Bank clearings for the six months ended June 30, 1919, show an increase of \$18,119,225 over the same period last year.

General business conditions in Paducah have an air of prosperity on all sides. Bank deposits continue to grow. Despite the high cost of building materials, there is quite a little building going forward.

The International Shoe Company is about ready to start the manufacture of shoes.

The receipts of the street railway company for June, 1919, were in excess of those of last year.

Pawtucket, R. I., July 8th:

The banks report for June, 1919, an increase of 2.2% in commercial accounts and an increase of 13.7% in savings accounts.

During June, 1919, 10 building permits were issued, valued at \$25,575, against 14 last year, valued at \$52,002.

Post office receipts for June, 1919, were \$14,816, against \$12,588 last year.

General business conditions were excellent in June, the demand created by both foreign and domestic trade keeping the manufacturers busy, and overtime and night shifts are the order of the day. The scarcity of skilled labor is the principal cause of delay in filling orders. Many manufacturers refuse to take new orders, finding it impossible to turn out those in hand.

Merchants report a good amount of business, and the building trade is showing considerable activity. Many mills are making additions and new mills are being erected.

Pensacola, Fla., July 10th:

During June, 1919, 108 building permits were issued, valued at \$109,794, against 82 last year, valued at \$60,141.

Local merchants report a slight decrease in business the past month, due principally to the reduction of the enlisted force at the Naval Air Station and Fort Barrancas.

The Emergency Fleet Corporation has allowed \$450,000 for the construction of a 5,000-ton floating dry dock for Pensacola Harbor. In addition, \$200,000 was raised locally for the erection and equipping of a machine shop for this dock. It is estimated that the dock will employ 200 men and will be one of Pensacola's best assets.

Work on the fuel tanks and docks of the Texas Oil Company for supplying deep sea-going vessels will be completed the early part of August.

Reno, Nevada, July 21st:

Bank clearings for June, 1919, were \$3,433,209, against \$2,574,218 last year. For the first six months of 1919 they were \$17,293,901, against \$14,278,721 last year.

During June, 1919, 3 building permits were issued, valued at \$13,800, against 7 last year, valued at \$6,850.

Post office receipts for June, 1919, were \$6,187, against \$8,295 last year.

During the last month business at Reno has been more or less at a standstill, due to the telephone strike. This, however, has now been adjusted, and an immediate return to good business conditions is looked for.

The banks appear to hold more deposits than ever before, and there is an abundance of money in circulation.

The season has so far been unusually hot and dry, and as a result range lands are drying up rapidly.

The receipts of the gas department are again the outstanding feature of the month's business. There was a gain of 17% in gas receipts as compared with a 4% increase in customers. This gain in receipts is probably accounted for by the natural reaction from war economy.

As a result of an inexpensive gas appliance campaign, the company has increased its connected load of gas-water heaters by approximately 10%, and incidentally has installed 25 new gas ranges.

Electric and water retail receipts were also satisfactory.

Savannah, Ga., July 10th:

Bank clearings for June, 1919, were \$37,812,267, against \$24,394,858 last year.

During June, 1919, 64 building permits were issued, against 14 last year.

Cotton receipts for June, 1919, were 151,420 bales, against 33,262 bales last year.

Turpentine receipts for June, 1919, were 7,421 barrels, against 6,341 barrels last year.

Rosin receipts for June, 1919, were 17,994 bales, against 20,577 bales last year.

The general business outlook is promising. This month the excursions over the various railways leading out of Savannah to various mountain resorts will begin, and the Ocean Steamship Company anticipates considerable travel to northern resorts.

There has been considerable local agitation over housing conditions in Savannah and over the general increase in rents. This, it is thought, will result in increasing building activity.

Both the passenger and the light and power receipts of the Savannah Electric Company for June, 1919, show increase over last year.

Seattle, Wash., July 9th:

Bank clearings for June, 1919, were \$163,184,179, against \$162,999,279 last year.

Building permits for June, 1919, were valued at \$1,755,795, against \$1,023,525 last year.

Real estate transfers for June, 1919, were \$2,010,873, against \$1,068,451 last year. Exceptional activity in local real estate appears to have been the outstanding feature of last month's business situation. The bulk of the transactions which make up a total of \$2,010,873 for June, 1919, were in connection with the sale and purchase of homes and retail store sites in outlying districts, which are rapidly building up.

The supply of labor is just about equal to the demand.

The United States Bureau of Estimates has just issued at Washington a crop bulletin, which indicates a very prosperous year for the farmers.

Sydney, Nova Scotia, July 25th:

During June, 1919, 50 building permits were issued, valued at \$64,230, against 34 last year, valued at \$59,393.

Customs receipts for June, 1919, were \$46,657, against \$112,539 last year.

The output of the Dominion Coal Company for June, 1919, was 224,451 tons, against 276,825 tons last year. Shipments were 206,724 tons, against 244,089 tons last year.

It is claimed in this section that the Dominion Coal Company's diminished output is due in a considerable measure to the fact that the Canadian Railways are burning American coal. The same condition is said to be affecting the output of the Nova Scotia Steel & Coal Company, Ltd., as well as that of the Little Bras D'Or Coal Company and other companies in this vicinity. There have been many demonstrations, especially in North Sydney and Sydney Mines, by the miners complaining against the general lack of work.

Recently the officials of the Dominion Iron & Steel Company closed their contract with the Dominion Government for 240,000 tons of ships' plates, covering a period of five years, at a price of about \$73 a ton; consequently work on the new plate mill is being rushed to completion, and it is expected that plates will be rolled by the first of the year.

A new syndicate has been organized which is making arrangements to construct a large modern fire-proof hotel of 125 to 150 rooms on the site of the former Sydney Hotel.

It is expected that a sum of \$100,000 will be appropriated by the Government of Ottawa for a wharf at Sydney, Nova Scotia. This should be a valuable asset to this community, as there is a marked lack of shipping facilities on the water front.

The housing problem continues serious. Quite a few houses, however, are being erected on the outskirts of the city.

The receipts of the Cape Breton Electric Company, Ltd., for June, 1919, were for all departments very gratifying, the increase over last year being marked.

Tampa, Fla., July 11th:

Bank clearings for June, 1919, were \$7,419,229, against \$5,369,042 last year.

Building permits for June, 1919, were valued at \$75,620, against \$31,430 last year.

Internal revenue collections for the year ending June 30, 1919, were nearly \$1,000,000 greater than for the previous fiscal year.

The launching of the steamship "Tampa" at the Oscar Daniels plant on June 12th completed the tonnage record of the local shipyards of 53,700 tons since August, 1916.

Woonsocket, R. I., July 19th:

During June, 1919, 46 building permits were issued, valued at \$148,628, against 20 last year, valued at \$9,005.

There is much activity at the textile mills. Several mills are planning extensions, and there are rumors of new mills. The textile people expect three or four years more of high prices and heavy demand.

General business conditions are reported as excellent.

There is a considerable amount of building going on, and we have made more short line gas and electric extensions this year than any year since the beginning of the war.

News from the Companies

Boston Office

Mr. Henry G. Bradlee is on his vacation.

Mr. George O. Muhlfeld has been appointed general director of the Division of Construction and Engineering.

Mr. T. T. Whitney, Jr., has returned from his vacation in New Hampshire.

Mr. Henry R. Hayes of the New York office made a flying visit to the Boston office while on his vacation.

Mr. Carl Weber of the treasurer's office spent his vacation in northern New Hampshire.

Mr. G. H. Balch of the New York office was at the Boston office recently.

Mr. William C. Capps of the firm of Capps, Cantey, Hanger & Short, Fort Worth, Texas, visited the Boston office recently.

Mr. Luther R. Nash is on his vacation.

Members of the Engineering and Construction Division had a very successful "get together" at the Corinthian Yacht Club, Marblehead, August 6th. Thirty-one were present, and made a very considerable in-road on the club's supply of broiled lobsters and chicken. Messrs. Muhlfeld, Bushnell and Junkersfeld were the instigators of the party. David Cooper proved his ability as an impromptu pianist and E. E. S. Birtwell made an excellent song leader.

Marriage intentions have been published by Miss Marion Groves, stenographer in the drafting department, and Mr. Gardner Nickerson of East Boston.

Mr. C. A. Carney of the Engineering Division has announced the birth of a son, Chester A. Carney, Jr., on July 11, 1919.

Announcement has been made of the engagement of Miss Marvel Horton of the auditing department to Lieutenant Donald Fuller of Winthrop.

Mrs. Henry Drown of the engineering stenographic department resigned her position on August 2nd. Mr. Drown has recently returned from overseas service, where he served as a first lieutenant of engineers.

Mr. E. J. B. Huntoon has been on vacation.

Mr. Richard H. McGrath has been appointed to assist Mr. Frederick S. Pratt in the work of the development department covering the investigation of new projects submitted to Stone & Webster.

Mr. B. Alcott Pratt, who recently returned to the organization from overseas service with the Army, left Boston to enter the accounting department of the Savannah Electric Company, on Monday, August 4th.

Mr. J. Gordon MacInnis, who has just returned from overseas service with the Army of Occupation, has entered the Treasurer's office.

Stone & Webster have been engaged by the Narrow Fabric Company to construct a reinforced concrete factory building; by the Michigan Lubricator Company to design and construct an extension to factory

building; by the United States Rubber Company to construct a plant for the G. & J. Tire Company at Indianapolis; and by Lever Brothers' Company to construct an extension to office building.

Baton Rouge, La.

Mr. L. R. Nash visited with us several days during July.

The Standard Oil Company announced an increase of 10% in the wages of the employees of the local refinery, effective July 16th.

An Advertising Club has been formed in Baton Rouge, and Mr. G. H. Wygant, our manager, was elected to the office of secretary-treasurer.

The Federal Bakery System is putting in a local bakery on Third Street, which will be in operation within a short time.

An anti-submarine flotilla recently spent several days at Baton Rouge. During its stay here several interesting demonstrations were given.

The Standard Motor Car Company, which was recently organized, opened their salesroom and garage during July.

On July 17th, the Baton Rouge Electric Company held the third annual picnic for their employees and friends. This picnic was held on the banks of the Amite River, about 17 miles from Baton Rouge, at the Hoo Shoo Too Club grounds, and everyone had a most enjoyable outing.

Beaumont and Port Arthur, Texas

Mr. P. E. McChesney, commercial agent, Beaumont Division, and wife have returned from a two weeks' vacation spent at Galveston and other Texas points.

Mr. Jas. F. McLaughlin, secretary to Mr. L. C. Bradley, Houston, Texas, spent the week end in Beaumont as the guest of Mr. and Mrs. A. F. Townsend.

Mr. and Mrs. A. F. Townsend and little daughter, Pauline, left for Auburn, Maine, and other Eastern points, on August 3. Mr. Townsend expected to be gone about a month, and Mrs. Townsend and daughter will spend the remainder of the summer in the East.

Mr. G. H. Clifford of Fort Worth paid us a visit during the month.

Mrs. Mabel L. Mitchell of the accounting department has returned to work after a pleasant vacation spent in Dallas, Texas.

On Wednesday, July 23rd, the Eastern Texas Electric Company gave its employees a picnic at Port Arthur. The company had exclusive use of the pier from 10.30 in the morning until 12.30 at night. The occasion was divided into two picnics, the first beginning at 10.30 A.M. and ending at 3.00 P.M., the second beginning at 6.30 P.M. and ending at 12.30. Special interurbans were run from Beaumont at 9.30 A.M., returning at 3.30 P.M., and others left Beaumont at 5.30 P.M. This was done in order that each and every employee should have a chance to attend.

Each employee was allowed to ask his family; and in case he had none, a friend. A picnic lunch of sandwiches, ice cream and cake, prepared by the trainmen's wives, was served both at noon and in the evening. Each one in attendance was provided with tickets entitling him to transportation and all the privileges of the pier, including cold drinks. There

was boating, swimming and other amusements, but perhaps the most active features of the pier were the roller coaster, which is one of the largest in the state, and the dancing in the big pavilion overlooking Lake Sabine.

The sports program included a 50-yard dash for boys under 15, prize \$2.00; a 50-yard dash for girls under 15, prize \$2.00; a 100-yard dash for men, prize \$3.00. There was also an interesting pie-eating contest. The pies were of the blackberry variety and were one and a half inches thick. The contestants had their hands tied behind them and had to eat from the table with no other assistance than their mouths. The prize was awarded to R. L. Jackson, and he was pronounced the champion pie eater of Texas. The program at night was practically a duplication of the day, with the addition of a tug-of-war.

Captain S. T. Pike was marshal of the day. J. H. Russell had charge of the transportation. L. W. Emery was chairman of the "Get Acquainted Committee," assisted by J. H. Jernigan, J. E. Thomas, W. M. Richie, H. E. Braunig and Knox Lee. The Sports Committee consisted of Joseph Bowes, chairman and dance master; L. W. Richards and W. I. Sturtevant, judges, and S. P. MacFadden, starter of the races. L. W. Richards, assisted by the ladies of the accounting department, made up the lunch committee. Committee on distributing free tickets to the amusements of the pier were R. T. Wright and G. W. Swift.

Attendance of employees was almost 100 per cent, besides the families and friends, there being approximately 600 in attendance. Everything was carried out successfully, even to the weather man being kind and holding up the rain which had fallen almost every day during the month. Everybody had a good time and it was a tired, but happy crowd that came home at night. It was hard to tell as we looked into the faces of those present which was the happier, those enjoying the hospitality of the company — and especially the children, their bright little faces all red with soda pop, smeared with ice cream, or flushed with excitement from the thrill of the roller coaster — or our manager, who planned and gave this long-to-be-remembered day of pleasure, and whose face was smiling and happy, and wherein we read that everlasting truth, "It is more blessed to give than receive." The pleasure on the part of both employees and manager has been emphasized by the fact that the stenographers were kept busy writing letters of thanks and appreciation for the employees to the manager and again expressing the pleasure and appreciation on the part of our manager.

Last, but not least, we would mention the fact that our manager was so careful that no employee should be forgotten on this day of pleasure that he had a dozen big watermelons purchased for the colored track gang. The correspondent feels that nothing more need be added to this, since we all know how much they were enjoyed.

Bellingham, Wash.

Mr. Roy Tierney has just returned from the battle front in France. Tierney, prior to the war, was conductor on the P. N. T. He enlisted first with the 2nd Company, and later entered the Officers' Training School at the Presidio, San Francisco, where he found that, being a Canadian,

he was not eligible to a commission in the U. S. army. Upon learning this he immediately went to Vancouver, B. C., and enlisted in the 72nd Battalion Seaport Highlanders. He had a varied experience in a machine gun crew, and at one time twenty-seven of his company were killed; at the same time his kit was blown from his back and a dent put in his helmet. Yet through it all he comes back without a scratch.

Miss Albright, who has charge of the customers' ledgers of the Pacific Northwest Traction Company, has been on her vacation.

Mr. Ira Marchant, formerly agent at Mt. Vernon, has resigned.

Miss Ada Astell is again acting as relief clerk in the auditing department during the vacation period.

Mr. B. Currie of the meter department visited Seattle to attend the graduation of his daughter, Vera, from the University of Washington.

Mr. W. H. McGrath, vice-president, Mr. H. J. Gille, sales manager, Mr. G. E. Quinan, electrical engineer, and Mr. F. P. Dexter, general accountant, were visitors from the Seattle office.

A contract has been let for paving approximately two miles of road in the city and four miles of waterfront road, which will give a continuous paving in Whatcom County on the Pacific Highway between Vancouver and Seattle.

The Workmen's Compensation Law, recently changed by the Legislature, provides both premiums and penalties, and in order to procure the greatest premium and provide against payment of penalties, the larger industries in the city of Bellingham have combined and employed a safety engineer to have charge of this work. A local Safety Council has been formed as a branch of the National Safety Council, and Mr. Sewall, our manager, is its first president.

Approximately twenty acres have been purchased by the State Normal Board for the erection of a dormitory at a cost of \$100,000, providing accommodations for one hundred or more students.

El Paso, Texas

The El Paso Electric Railway Club, which was formed in a small way earlier in the year, held a very enjoyable meeting in the Club House, Monday night, July 21st. After a very interesting talk by Mr. Chas. A. Brann, assistant claim agent, those present boarded waiting interurban cars and went down the valley to Ysleta, where with dancing and fountain drinks the evening was pleasantly passed. It is the intention to have a meeting each month, with some speaker for a short talk, followed by some kind of entertainment or refreshments. All employees are members, and are urged to attend and take part in all meetings.

Mr. Alves Dixon, claim agent, has returned from his trip to New Mexico. Mr. Dixon says he has found the "fisherman's paradise," and reports a most enjoyable outing.

Mr. R. A. Gill, manager's secretary, has returned from his vacation, a portion of which was spent at Elephant Butte Dam.

Mr. L. E. Delf, who left this company to enter military service, has returned and is at present clerk to the master mechanic. Mr. Delf left El Paso in May, 1917, to attend the First Officers' Training Camp at Leon Springs, Texas; later he went to Fort Leavenworth, Kansas. He

was then with the 90th Division from the time it was organized. Mr. Delf reached the rank of captain 315th Eng. 90th Div., and was in command of the headquarters company of his outfit. He served about a year in France as division engineer supply officer, returning to the States in July, 1919, where he was discharged. He then resumed his connection with this company.

Mr. Frank A. Loftus has returned to El Paso, and is again with the company's attorneys, the firm name now reading Davis, Goggin & Loftus. Mr. Loftus left El Paso in August, 1917, and served in France over a year as captain with the 141st Infantry. Mr. Potter presented Capt. Loftus with a revolver when he left, and Mr. Loftus says the gun was effectively used on the Boche.

Fort Worth, Texas

Mr. G. H. Clifford, manager, spent several days in Boston during the month and after his return visited Beaumont.

Mr. A. J. Rowe, formerly with the purchasing department, has returned from overseas and is again connected with the company. Mr. Rowe had a very entertaining experience, being fortunate enough to do some stenographic work in Paris for the Peace Commission.

Mr. Geo. Brush, superintendent of transportation, Houston, Mr. Jack Landrigan, chief inspector for the Houston Electric Company, and Mr. J. F. McLaughlin, secretary to Mr. Luke C. Bradley, spent two days in Fort Worth during July.

Haverhill, Mass.

Charles Farrington has recently been discharged from the Merchant Marine Service, and has re-entered the service of this company as cashier.

Laroy Ayer, first-class yeoman, stationed at the Brooklyn Navy Yard, recently called at this office.

Miss Almira Cresine spent her vacation at the Thistle Cottage, Salisbury Beach, Mass.

Messrs. Walter E. Skulley, T. H. Smith and W. H. Schoonover of the auditing department, are here making the periodical audit of the books of the company.

Mr. H. T. Edgar and Mr. M. L. Sperry visited the office during the month.

Lieut. Tom P. Walker has returned from overseas and called at this office. Walker is now in San Francisco undergoing treatment at the Letterman General Hospital.

Miss Irene Brown spent two weeks at the Abbott Farm, Kearsarge, N. H.

The seventh annual outing of the employees of this company was held at Hampton Beach on Thursday, July 24th. Nearly one hundred employees and their families left by automobile early in the morning. A shore dinner was served at noon at the Ashworth Hotel. Sports were the big attraction of the day. A baseball game was played between the office employees and employees at the plant. The game was called at the end of the sixth inning with a tie score of 5 to 5. This was done so as to afford opportunity for other sports. Mr. H. T. Edgar of the Boston Office was guest of honor.

Houghton, Mich.

Mr. A. Brackensick, for the past few years line foreman at Calumet, has left the service of the Lighting Company to go to Keokuk, Iowa.

A new grade school, to cost \$120,000, is being erected in Red Jacket.

On June 26th, the L. & T. Club members and families journeyed to Electric Park and held a basket picnic. During the evening numerous sports took place, the main event being a ball game between Traction and Lighting Companies. The game ended in a tie score of 6 to 6 at the end of the tenth, time being called on account of darkness. The Calumet & Hecla Orchestra furnished music for dancing in the pavilion, which was enjoyed until a late hour.

An organization to be known as Association of Commerce was recently formed in Houghton. The purpose of this association is to further community development. Officers have been chosen and an extensive program has been laid out for the coming year. A similar organization has likewise been formed in Hancock.

Elaborate celebrations for the returned soldiers and sailors of the district were held in Houghton, Calumet and Lake Linden on June 7th. The Houghton County Electric Light Company donated a huge illuminated "Welcome" sign for the celebration which took place in Houghton. The streets in all of the towns were gaily decorated for the occasion, and it was without question the greatest celebration ever held in the Copper Country. A community dance was given in the evening at the Amphidrome in Houghton, which was attended by 5,000 people.

William Kilpela has returned from service in the army and has resumed his duties as conductor in the Hancock Division of the Traction Company.

Gust Line has recently returned from service in the army and has resumed his duties as motorman in the Hancock Division of the Traction Company.

Morton Mitchell, of the Houghton meter department of the Lighting Company, has resigned his position with the company and has gone to Auburn, N. Y.

Adelard Ruelle has returned from service in the army and has resumed his duties in the Houghton meter department.

William Edwards has joined the staff of the Lighting Company in the Houghton office as ledger clerk.

Mr. E. L. Milliken, manager of the Houghton Companies, during the latter part of June made a trip to Boston and other eastern points.

The old drawing mill of the Roebling wire mill at Dollar Bay was destroyed by fire on July 21st. The plant resumed wire drawing a few days later by transferring its drawing operations to other machinery in the new portion of the plant.

Irving Schuler and Joseph Condon have returned from service overseas and have been given work respectively in the power station and meter department.

Miss Aileen Krellwitz, for the past year employed in the accounting department of the Houghton office of the Lighting Company, has resigned her position and will locate in Detroit.

On July 16, 1919, the Houghton County Bus Company took over the

operation of the busses between Houghton, Hancock and Lake Linden, the same which were purchased from the Guibord-Penberthy Transportation Company.

Mr. Joseph Laurie has returned from service in the army and has resumed his duties at the Hancock carhouse of the Traction Company.

The wedding of Miss Anna Marie Beiring, for the past five years employed in the accounting department of the Houghton office, to Mr. Casper A. Ritter, of Detroit, took place on July 15th at St. Joseph's Church, Hancock, Mich. The employees of the companies presented them with a cut glass water set. Mr. and Mrs. Ritter left the same day on the steamer "Tionesta" for Detroit, where they will make their home.

Earl Trowbridge, of the Houghton accounting department, entertained the men employees of the clerical force of the Traction and Lighting Companies at a lunch party to the Canal, in the launch "Onaway," on July 23rd. A hot roast beef dinner was served.

Mr. R. A. Gordon, commercial agent of the Lighting Company, attended the National Convention of Association for Contractors and Dealers, which was held in Milwaukee, Wis.

Mr. R. P. Schumaker, chief clerk of the Houghton Companies, has returned from a two weeks' vacation, which was spent at Lake Gogebic in the Iron Country of Michigan.

Houston, Texas

G. S. Brush, superintendent of transportation, and J. W. Landrigan, chief inspector, spent a few days in Fort Worth with reference to transportation matters.

H. L. Harding, assistant treasurer, is spending his vacation in his old home, Gorham, Maine.

Mr. H. W. Withers of our claim department has returned to his desk after an illness of approximately five weeks.

L. W. Emery, chief clerk, Joe H. Russell, superintendent of transportation, and P. E. McChesney, commercial agent of the Eastern Texas Electric Company of Beaumont, visited us during the month of July.

W. E. Wood, manager of the Galveston Electric Company, paid us a visit during the month.

G. S. Brush, superintendent of transportation, has just inaugurated a regular monthly luncheon for the supervisory force. At this luncheon the mechanical, claim, track and overhead departments are invited to participate. The object of this meeting is to discuss the various problems encountered during the month.

On July 1st, the office employees held their Annual Picnic at Galveston. A special interurban car was secured which took the party of approximately fifty to Galveston Beach. A dip in the surf, luncheon on the beach and dancing were the features of the occasion.

During the month of July, the following men received their honorable discharge from service and returned to their positions with the company: conductors — D. G. Pinkston, R. E. Coley, J. J. Stanford, R. J. Holick, W. R. Schamhals, J. L. Sowers, W. H. Rhode, W. T. Brunson, E. F. Holick, J. F. Lindley; Motorman O. O. Morosko; Sam McNeal, negro track man; Ernest Howard, negro track man; Sol Tucker, negro track

man. Henry F. Ruland of Ambulance Company No. 357, who was formerly connected with the transportation department, returned and is now occupying a position as clerk in the claim department.

The farmers throughout the southern and central parts of Texas have been greatly worried about the large amount of rainfall. Rain has been fairly general throughout the state, with the exception of the Brownsville territory. Rains in the cotton region have had the tendency to cause the cotton to grow rank and to sap the energy from the bolls, reducing the crop. The heavy rains as well as the heavy winds, in many cases, washed the bolls off the plants.

The bad weather has handicapped the harvesting of grain and wheat and in the cotton section has made it difficult for the farm hands to clean out the weeds.

In the past month there were 408 permits issued by the city building inspector's office, as compared with 179 permits issued a year ago. The value of the permits issued this July is \$607,803, as compared with \$347,134 issued last July. The number of permits has increased in a greater proportion than the valuation. This is due to the tremendous increase in the number of small residences now being erected over the city. Houston is really undergoing a great residence building boom.

Keokuk, Iowa

Starting with a few hundred members and their families eating supper under the trees, and ending with a crowd of over a thousand Keokuk people applauding a long movie show, the picnic of the High Tension Club at Rand Park on July 22nd was as successful as it was unique. Music was furnished by the High Tension Mandolin Club.

It is reported that the Keokuk National Bank will build a new bank building in Keokuk at its present location on Fifth and Main Streets. This new building will be modern in every way, and will be an architectural ornament in the business center of Keokuk.

The Baker-Dodge Theatre Company plans to erect a new \$75,000 theatre, which it expects will be completed and ready to open before December 31st. This new theatre will be located on Main Street near Sixth Street and will seat approximately 800 people. Present plans indicate that it will be one of the finest of its size west of the Mississippi. This theatre will be operated by the Baker-Dodge Company in addition to other theatre interests in Keokuk operated by them.

The ground has been cleared for the new office building of the Standard Oil Company at Fourth and Blondeau Streets, and construction is expected to begin very shortly.

S. F. Baker & Company, local medicine manufacturers, have purchased the property at Eighth and Johnson Streets, formerly owned by the National Produce Company, and will erect a large combined office and warehouse building.

The annual Keokuk Chautauqua began July 25th at Rand Park and lasted for one week.

On July 10th a new moving picture theatre opened in Keokuk, known as the "New Colonial."

On July 1st the city of Keokuk let the contract for the construction

of the new West Keokuk sewer system to the McManus Quarries Company.

On July 2nd the Keokuk Commercial Club motored to Montrose, Iowa, for its monthly meeting and a fried chicken dinner.

The Federal System of Bakeries has opened a branch bakery in Keokuk in the Estes Block.

The new factory building for the Armored Tire and Rubber Company at Hamilton, Illinois, has been completed, and the machinery is now being installed.

Mississippi River Power Company

The round robin tennis tournament among members of the Mississippi River Power Company has just been completed, and was won by Mr. J. L. Brady, with Mr. R. B. Howland second.

A tournament between the married men with children, as challengers, and married men without children and bachelors was completed in favor of the latter.

The United Lead Company is beginning at once to construct a steel and brick building to replace its present wooden structure. In addition to this it is adding twenty feet to the end of its present building to make storage space. The company is taking over two of the buildings of the River Smelting and Refining Company, but will leave them where they now stand. The building and other improvements which are contemplated will cost in the neighborhood of \$50,000, and will be completed by November 30th.

Keokuk Electric Company

Mr. H. P. Geisler, Jr., recently of Paducah, Kentucky, spent from July 11th to July 27th in Keokuk in connection with gas manufacturing and testing matters.

Mr. R. R. Ralston, new business man for the Paducah Companies, spent the last two weeks of July in Keokuk on his vacation.

Mr. J. P. Ingle, manager, spent a few days during the middle of July in Chicago, assisting with arrangements for a special mid-year meeting of the Iowa Electric Railway Association, of which he is president, which meeting is to be held some time during September.

On July 31st Mr. Earl F. Doyle, formerly cashier for this company, arrived in Keokuk from France after being in the Government service for eighteen months. Mr. Doyle entered the army as a private and was discharged as a second lieutenant. He will re-enter the employ of this company in the accounting department.

Miss Helen H. Hodge, stenographer, spent the latter part of July in Minneapolis, Minnesota, on her vacation.

Key West, Fla.

Mr. William D. Hearne, electrical engineer for the company, was married to Miss Marguerite Archer on the evening of June 30th.

Mr. Willard B. Newell has joined our commercial department. Mr. Newell graduated from Boston "Tech" in 1917, and entered the statistics department, but left in December, 1917, to attend the 3rd

Officers' Training School. He secured a commission as 2nd Lieutenant in Infantry, and was gassed in France in October, 1918. After several months in hospitals in the United States he was released as cured, and came back with the organization in April, 1919.

Mr. B. E. Van Vliet is auditing our books.

Messrs. J. W. Kelly and R. K. Patton, of the accounting department, won the canoe race on the 4th of July with the canoe "Kweco."

Miss Portia A. Johnson has been employed as managers' stenographer, to succeed Miss Flora Welch, who left our employ August 1st.

Mr. John C. McCluskey, of our accounting department, spent his vacation in Tampa.

Mr. Paul Mesa, superintendent of distribution, spent his vacation in Tampa.

Mr. Marco Mesa, collector, has returned after spending his vacation in Cuba.

Mr. S. C. Jacoby, engineer at the power plant, spent his vacation in Philadelphia.

Work on the new Florida East Coast Hotel on the South Beach is progressing rapidly. All reinforced concrete work is completed as far as the second story.

Two fine business buildings are being erected on Duval Street, between Fleming and Southard, which is now our most active business section.

The Texas Oil Co. has just completed one new 30,000-barrel fuel oil tank and is expecting the first boat-load of oil within a few days. Another tank of similar capacity is being erected, and two 6,500-barrel tanks for distillate and mixing oils will be built within a very short time.

Middletown, Conn.

Ensign Joseph H. Gann has recently returned from service, and has taken a position temporarily in the Pawtucket Power Station of the Blackstone Valley Gas & Electric Company.

Owing to the lack of housing facilities in Middletown, two home building corporations have been organized. They are the Middletown Homes, Inc., and the Mechanics Homes, Inc. The Middletown Homes, Inc., have submitted plans to contractors for the building of twenty-two new homes in one locality. The Mechanics Homes, Inc., have nearly completed the building of five, and contemplate building many more.

On July 14th the steamship "Gildersleeve," a sister to the "Battahatchee," was launched from the Gildersleeve Ship Construction Company. These are the two largest vessels ever launched on the Connecticut River.

Paducah, Ky.

The Employees' Club held its annual outing at Wallace Park on June 24th. The affair was very successful and was attended by approximately 300 people. The program included sports, a dance at the Pavilion in the evening, and a moving picture show at the open air theater. The most interesting and novel sport on the program was that of walking the greasy pole, which extended over the lake and was anchored by the line

crew to the concrete base of the old electric fountain. The effort to walk the pole and capture the pig at the end of it was a source of much amusement. The pig was won by Warner Jones, of the line department. The program committee had arranged for a swimming match between Mr. Fred C. Cloen, general superintendent, and Mr. J. W. McNeely, superintendent of transportation, both of whom are noted athletes. Life belts and the sundry paraphernalia customarily used by expert swimmers were furnished by the committee. Mr. McNeely at the last moment refused to race, giving as a reason that the displacement of water would be so great that it would overflow the dike and leave the water too low for pleasure purposes the remainder of the summer.

Mr. W. S. Beavers, the oldest motorman in the employ of the company, died on June 19th, as a result of an accident.

Mr. R. R. Ralston, commercial agent, has left Paducah for Iowa, where he will spend his vacation.

The summer, to date, has been extremely hot, and the exodus of vacationists to Northern points has been larger than in normal years.

Seattle, Wash.

The Northwest Electric Light & Power Association is to hold its annual convention in Seattle, September 10th to 13th, inclusive. The meetings are to be in the Press Club Hall, Fifth Avenue and University Street. For the reason that no hotel accommodations for the convention could be obtained, it was necessary to arrange for the Press Club Hall, and no hotel has been designated as headquarters.

A very interesting program has been arranged, the first session opening at 10 o'clock, Wednesday morning, with a welcome to Seattle by Mayor Ole Hanson. Mr. H. J. Gille, sales manager of this company and president of the Association, will deliver his address and then the convention will take up its work. The various committees will submit their reports and the afternoon session will have papers, including a technical committee report by G. E. Quinan and a paper on accounting by J. S. Simpson.

The evening session will present an illustrated lecture by Mr. Turpin, of the Westinghouse Company, on "Electricity Today." Thursday morning Mr. W. H. McGrath will address the convention on the "Value of Public Utility War Experiences and their Effect on the Future," and in the afternoon Mr. C. A. Winder of the General Electric Company will speak on "Industrial Electric Heating."

"Improving Electrical Merchandising," discussed by W. R. Putnam and L. A. Lewis, will fill the Friday morning session, and in the afternoon a discussion of "Ranges and Water Heaters" will be presented by A. C. McMiken and others. Both of the Friday sessions will be in the nature of "round table" talks of a general character. The election of officers will follow and the banquet will be held Friday evening.

The local committee, headed by President Gille and Secretary W. E. Herring, have arranged an attractive program of social events, including an automobile trip to the company's plant at Snoqualmie Falls and a golf tournament for those interested in that game — the prize for which is a silver cup to be played for annually.

July 10th, at San Francisco, in the offices of General Manager John A. Britton, of the Pacific Gas and Electric Company, there was a meeting of Pacific Coast men drafted for committee work in connection with the 1920 convention in Los Angeles of the National Electric Light Association, scheduled for May. Those in attendance from this company were Messrs. H. J. Gille, E. A. Batwell and Norwood W. Brockett. The meeting was called by Mr. R. H. Ballard, first vice-president of the Southern California Edison Company of Los Angeles, who is president of the N. E. L. A. There was a large attendance of members of the association connected with western companies.

Mr. F. M. Hamilton, for the past eight years connected with this company in the capacities of purchasing agent and claim agent, has resigned his position here to accept a place in the transportation department of the Philadelphia Rapid Transit Company, and will leave for his new home in a few days, reporting for duty in Philadelphia on the first of September.

The Puget Sound Traction, Light & Power Company, through the general sales department, to be used through the entire district, has issued a new map of the territory in which the P. S. T. L. & P. Co., subsidiary and connecting companies operate. The district covered is from the International boundary on the north to Olympia on the south, and from the Cascade Mountains to tidewater. The map is in four colors and shows the transmission lines, location of generating plants and substations, sound and river waterways, steam and electric roads and automobile roads. It is the most comprehensive contribution to map literature thus far issued in the district. The drawings were made in the engineering department of this company and were compiled from the U. S. Geological Survey, the state engineering department and highway commission department, and the engineering records of the counties of Whatcom, Skagit, Snohomish, King, Pierce, Kitsap and Thurston.

Woonsocket, R. I.

Woonsocket had its Welcome Home celebration on July 4th, 5th, 6th. An impressive fireworks display, big parade, ball games, boxing, sporting events, dancing, and canteens all over the city were among the features of the celebration. Owing to the extreme heat, the canteen feature proved the most successful one, at least from the service men's standpoint, as many thousand bottles of soft drinks were consumed during the celebration.

The company has recently completed contracts with the Philmont Worsted Company, a new spinning mill, for 750 kilowatts; with the Jarret Brothers Company, a worsted yarn mill, for 350 kilowatts; and with the Bernon Worsted Company, a woolen yarn mill, for 250 kilowatts. Part of this load will be added within the next month or two, and it is expected that all plants will be running full by January 1st.

The Employees Club has plans under way for an outing, which will be held probably at Lake Pearl, Wrentham, Mass., the first week in September. Committees are at work planning the sporting events, and working out a program, and there is every reason to expect that the event will be a most successful one.

Gardner Rogers, manager, and his family, have taken a cottage at Nonquitt, Mass., for August and early September. Mr. Rogers plans to spend the week-ends with his family at the shore.

P. F. Hodgkins, electric superintendent, is spending his vacation at Auburn, Maine.

F. J. Nason, gas superintendent, is also on his vacation at Haverhill, Mass.

W. L. Cheney, meter foreman, is at Lake Winnepesaukee for his vacation.

Miss Harriette Basquin has recently entered the commercial department as floor saleswoman.

Mrs. Minnie McCooey, formerly floor saleswoman, is now in charge of appliance sales, and is spending a great deal of time on the outside.

LIBRARY NOTES

"*A List of Atlases and Maps Applicable to the World War*" has been issued by the Library of Congress in a volume of 202 pages. It has a subject index and an author list, as well as a table of contents. The prefatory note says:

"It is difficult within the limited size of this monograph to cover in detail the vast areas embraced in the present great conflict. Efforts, however, have been made to describe the most recent maps and atlases which have been published from 1914 to 1917. Some few, which are of interest and authoritative, previous to these years, have been included."

"*Selected List of References on Economic Reconstruction, including Reports of the British Ministry of Reconstruction*" is a compilation of the Library of Congress in 47 pages with subject and author index and 175 entries. The table of contents and annotations make it a useful document, and its purpose "is to furnish to such institutions and individuals as are not receiving the more extensive bibliographies a brief list of readily accessible material which gives general insight into the subject."

Smithsonian Institution has issued Bulletin No. 102, Part 5, a pamphlet on "*Mineral Industries of the United States*," with the sub-title "*Power: Its Significance and Needs*." It is one of a series of papers "under preparation for the purpose of interpreting in non-technical language the significant aspects of each resource of mineral origin, in anticipation of a growing demand for concise summations of technical knowledge in a form adapted to current use." Among the contents are the "Full utilization of power materials," "Correlation of water power and coal power," "Nationalization of industrial opportunity" and a "Summary."

"*Electric Light and Power from Small Streams*" is separate from the Yearbook of the Department of Agriculture, 1918, No. 770. The author says that "scattered throughout the country are innumerable brooks and small streams, some not wider than a few feet, which at first sight may appear totally insufficient to produce power for practical purposes, but which, upon examination and development, may be made to supply enough power for all farm and domestic needs." Hence, one of the tables is a guide for making lighting requirement estimate for a house, another for outbuildings. It has tables

showing the approximate consumption of electricity for small motors and for household appliances and also shows the power required to operate different farm machines. It tells informally how to measure stream flow and how to erect a weir. It also gives a table on the flow in cubic feet of water per minute for each inch in length of weir and for depths from $\frac{1}{8}$ inch to $24\frac{7}{8}$ inches. It also tells how to find the available horse power, and has suggestions for storing the water of streams too small for immediate use.

The General Electric Company has issued a "*Manual for Stenographers and Phonograph Operators*," with reference to both internal letters and external letters. It may be interesting to note that internal letters have no salutation or complimentary closing except when of a personal nature. For external letters the standard is to say "Mr." rather than "Esquire," and "Gentlemen" rather than "Dear Sirs," "January 10" rather than "January 10th." Apropos of these matters, look for the book entitled "Everyday English" which Dr. Francis K. Ball of Ginn & Company has been at work upon, and look to the next publication of the large Webster Dictionary for some advice on "Business English" in its preliminary pages. While the "Webster" publishers may be giving no definite promise to incorporate such material, there is reason to believe that they are thinking seriously of doing so.

The American Chemical Society has published three volumes of the "*Decennial Index to Chemical Abstracts, 1907-1916*," two of the volumes including the author index and the third volume including the subject index through the letter K. The subject index volume from L to Z inclusive is to appear soon.

"*The Use of Print*" is the title of a daily paper that was issued at the convention of librarians at Asbury Park, June 23rd to June 27th, inclusive. Each issue contained 10 pages and in size it was the same as our dailies. Many of the articles are of a spicy character, and those who could not attend the convention but would care to know what happened can to advantage read this publication, which should be found in most of our large libraries and which we hope will be continued at next year's convention, which is likely to be at Denver or Colorado Springs.

LIBRARY OF STONE & WEBSTER

Recent Accessions

(40) Geology

- 410 Oil and gas geology of the Birch Creek—Sun River area, Northwestern Montana. E. Stebinger... U. S. Geological Survey Bulletin 691-E. Wash., 1918. (35p), 6x9. *6874.B691-E
- 411 Anticlines in a part of the Musselshell Valley: Musselshell, Meagher and Sweetgrass Counties, Montana... U. S. Geological Survey Bulletin 691-F. Wash., 1918 (24p), 6x9. *6874.B691-F
- 412 Geology of the Lost Creek coal field, Morgan County, Utah. F. R. Clark... U. S. Geological Survey Bulletin 691-L. Wash., 1918. (11p), 6x9. *6874.B691-L

(57) Aviation and Military

- 413 U. S. Army aircraft production facts. Compiled at the request of the Assistant Secretary of War by Col. G. W. Mixter, A. S., A. P., and Lieut. H. H. Emmons, U. S. N. R. T. of the Bureau of Aircraft Production. Jan., 1919. Wash., 1919. 106p, 6x9. *6830.0776
- 414 Kelly Field in the Great World War. Edited by Lt. H. D. Kroll. San Antonio [c1919]. 216p, 9x12, illus. *0776.K919
- 415 America's Munitions, 1917-18: Report of B. Crowell. Wash., 1919. 592p, 6x9, illus. *6830.C886.05

(73) Sociology and Industrial Problems

- 416 The man in the street. Paper read at Pacific Coast Section, N. E.-L. A., Coronado, California, May 1, 1919. S. M. Kennedy. 16p, 4½x6½. *0291.K3862
- 417 Disabled soldiers' and sailors' pensions and training. E. T. Devine and L. Brandt. Carnegie Endowment for International Peace... Preliminary Economic Studies of the War... No. 12. N. Y., 1919. 471p, 7x9½. *017.C211, No. 12
- 418 Labor: labor movement clearly defined... American Exchange National Bank, N. Y. nd. 13p, 4x9, *029.Am3513
- 419 Proceedings of the conference of the President of the United States and the Secretary of Labor of the governors of the states and mayors of cities... Wash., D. C., March 3, 4, and 5, 1919. U. S. Department of Labor, Information and Education Service. Wash., 1919. 325p, 6x9, illus. *6899.In35.05
- 420 An educational movement to inform the public with reference to the industrial development of America. Under the direction of J. E. Jones, U. S. Press Association. Newspaper clippings of articles that have been syndicated. Wash., nd. unpag., 9x11½. *0291.J178-a2
- 421 Report of Commission on International Labor Legislation of the Peace Conference; The British National Industrial Conference: Report of Provisional Joint Committee, July, 1919. International Conciliation. No. 140. N. Y., 1919. 53p, 5x8. *6999.-Am352c
- 422 Community Service for Industry: a magazine for American betterment, social and industrial, through the art spirit. St. Louis Art League Bulletin, June, 1919. C S I 6/19

(74) Financial

- 423 Annual report of the Comptroller of the Currency... December 2, 1918. Vol. 2. Wash., 1919. 854p, 6x9. *6826. Vol. 2, 1918

- 424 **The Economist. Part II. Investors' Section. The Economist Publishing Company, Chicago [c1918]. 178p, 9½x13. *024.Ec74.7/19**
- 425 **Acceptances: including regulation and rulings of the Federal Reserve Bank of New York. April, 1919. N. Y., 1919. 64p, 6x9. *029.N21ai**
- 426 **Acceptances: their importance as a means of increasing and simplifying domestic and foreign trade... 2d revised edition, June 1, 1918. Prepared... by The American Exchange National Bank, N. Y. [c1918]. 79p, 6x9. *025.Am3513**
- 427 **Financing domestic and foreign trade. Prepared... by The American Exchange National Bank, N. Y. [c1919]. 32p, 6x9. *027.Am3513**
- 428 **Foreign Exchange... American Exchange National Bank, N. Y. nd. 10p, 3½x5½. *025.Am3513f**
- 429 **Economic and financial situation of Switzerland. Swiss Bank Corporation, Basle, 1919. 99p, 6x9. *8120.025**
- (75) Annual Reports
- 430 **Annual report of the Hydrographic Office for the fiscal year 1918. Appendix No. 1 to the annual report of the Chief of the Bureau of Navigation. 1918. Wash., 1918. 10p, 6x9. *6862.H999, 1918**
- 431 **Seventh annual meeting Chamber of Commerce of the United States held at St. Louis, Missouri, April 29-May 1, 1919... 80p, 6x9. *6800.C 35p, 1919**
- 432 **Proceedings of twenty-first annual meeting National Fire Protection Association, Washington, D. C., May 8-10, 1917; also twenty-third annual meeting, Ottawa, Canada, May 6-8, 1919. vp, 6x9. *6999.N213, 1917 and 1919**
- 433 **8th, 9th and 10th annual report of Board of Supervising Engineers Chicago Traction, covering period ended Jan. 31, 1915 to Jan. 31, 1917. Chicago, 1917 and 1918. vp, 6x9. *2731.Su 7 1915, 1916 and 1917**
- (76) Legal
- 434 **Business law for engineers: Part 1 — Elements of law for engineers, Part II — Contract letting. 2d edition. C. F. Allen. N. Y., 1919. vp, 6x9. *03.Al532**
- 435 **Report of Hearings before the Federal Electric Railway Commission; Nos. 1-10... Wash.,... 8x11. *6948.034**
- 436 **A bill to repeal the Act entitled "An Act to authorize the President to provide housing for war needs" approved May 16, 1918... 66th Congress, 1st Session, H. R. 6563, June 24, 1919. 4p, 7½x11. *6800.0319h**
- 437 **A bill to create a Federal Power Commission and to define its powers and duties, to provide for improvement of navigation, for development of water power... 66th Congress, 1st Session, H. R. 3184, May 26, 1919. 36p, 7½x11. *6800.0319fp**
- 438 **Public Utilities Reports annotated:... 1919B. Lawyers Co-operative Publishing Company. N. Y. [c1919]. 1146p, 6½x9½. *035.L449.1919B**
- 439 **West Virginia Traction and Electric Company: application to change passenger rates submitted May 5, 1919 and decided May 23, 1919... The Public Service Commission of West Virginia. Charleston, 1919. (12p), 6x9. *2404. Bulletin 49**
- 440 **Application of Appalachian Power Company for authority to increase its rates for furnishing electrical energy to its power consumers having an installed capacity of fifty horse power and over; granted in part. Submitted March 24, 1919 and decided April 25, 1919... The Public Service Commission of West Virginia. Charleston, 1919. (27p), 6x9. *2404. Bulletin 48**
- (77) Public Utilities
- 441 **Report of the Street Railway Investigation Commission of Connecticut appointed in accordance with an Act of the General Assembly of the year 1919, approved February, 1919, under which the commission was created... 51p, 6x9. *1600.St83.0521**

- 442 Plan for a zone system of fares upon the lines of Public Service Railway Company... Newark, 3/19. 207p, 9x12, maps. *1900.P962.0221
- 443 Committee of One Hundred appointed by American Electric Railway Commission to represent the electric railways before the Federal Electric Railway Commission appointed by the President of the United States July 1, 1919. 4p, 8½x11. *6940.093c
- 444 The public utility situation: a circular issued by Stone and Webster re the present prices, with conditions improving, the opportunity for profitable investment in many securities of established companies. June 28, 1919. Boston, 1919. 3p, 8½x11. *600.025pu
- 445 Twentieth annual number of Moody's Manual, public utility section, 1919. N. Y. [c1919]. 2332p, 6½x9½, maps. *02.M77pu.-1919
- 446 Seventh annual report of the Connecticut Public Utilities Commission for the fiscal year ending Sept. 30, 1918, and including the financial reports of all public service companies for the calendar year ending Dec. 31, 1917... Hartford, 1919. 684p, 6x9. *1604.1918
- 447 Annual and statistical report of the Public Service Commission of New Hampshire for the eighteen months ending Dec. 31, 1917, Vol. VII. Manchester, nd. 652p, 6x9. *1204.1917
- 448 Twelfth annual report of the New York Public Se(nice Commission, 2d District, for the year ended Dec. 31, 1918. Vol. I. Albany, 1919. 653p, 6x9. *1705.1918.Vol.I
- 449 Report of the Board of Commissioners of Public Utilities Province of Nova Scotia for the period ending Dec. 31, 1918. Halifax, 1919. vp, 6x9. *7280.P96.1918

(80) Statistics

- 450 Statistics of labor organizations in Massachusetts, 1916-1917. Mass. Bureau of Statistics, Labor Bulletin No. 126. Nov. 1, 1918. Boston, 1919. 54p, 6x9. *1402.L.11.1916-17
- 451 The decennial census of the Commonwealth 1915, Part III — nativity, color of race, illiteracy, political condition, ages and conjugal condition. Mass. Bureau of Statistics. Boston, 1918. (194p), 6x9. *1402.C33.Pt.3.1915
- 452 Japan: commercial and financial data, Jan. 27, 1919... The American Exchange Bank, N. Y. 1919. 12p, 3½x6. *8270.Am-3513.02

(90) Sources of Information

- 453 Members of the United States Senate and the House of Representatives for the Sixty-sixth Congress, together with a list of all standing and select committees. Corrected to May 28, 1919. 36p, 4x9. a*6800.093se5/28/19
- 454 Official Congressional Directory for the use of the United States Congress. July, 1919, 66th Congress, 1st Session. Wash., 1919. 553p, 6x9. a*6800.C76.7/19
- 455 Decennial Index, 1907-1916, Chemical Abstracts. Author index, A-K and L-Z; also Subject index, A-K. American Chemical Society. Easton (1919). vp, 6x9. *6908.096au and *6908.096su
- 456 List of references on the Monroe Doctrine... U. S. Library of Congress. Wash., 1919. 122p, 7x10. *6808.096md
- 457 The Harvard Engineering School, 1919-20. Official Register of Harvard University. Vol. XVI. March, 1919. No. 14. Cambridge, 1919. 71p, 5½x8. *1445.H26es.1919-20
- 458 Graduate School of Business Administration. Official Register of Harvard University. Vol. XVI. April 21, 1919. No. 17. Cambridge, 1919. 92p, 5½x7½. *1445.H26g.1919-20
- 459 Official directory and guide of the Builders Association of Chicago 1916:... Chicago, 1918. 342p, 6x9½. *2731.0314

- 460 Educational directory, 1918-1919. Bulletin 1918, No. 36. U. S. Bureau of Education. Wash., 1918. 247p, 6x9. *6873.093.1918-19
- 461 Descriptive pamphlets with maps giving a list of resort hotels, boarding houses located along the New England shores south, north and east of Boston, also for the lakes and mountain resorts of New England. U. S. Railroad Administration. N. Y., 1919. vp, 4x9, illus. *1000.Un3.061m, n and s
- 462 The American International Corporation Argosy. (Issued monthly.) Vol. 1, No. 2, June, 1919. N. Y. [c1919]. 15p, 6x9. Arg 6/19
- 463 Bulletin of the Associated Mountaineering Clubs of North America. (The Bureau consists of 29 clubs and societies, comprising an individual membership of over 45,000.) N. Y., May, 1919. 30p, 4x6. *6999.As785B5/19
- 464 Filing: a magazine on indexing and filing. Vol. I. June, 1918-Dec., 1918. Filing, Incorporated, publishers. N. Y. 174p, 6½x10, illus. Filing. Vol. I, Je '18-Dec. '18
- 465 The American Legion Weekly. Vol. 1, No. 1, July 4, 1919. The Legion Publishing Corporation. N. Y. [c1919]. 32p, 8x11, illus. V*94j-am 7/4/19
- 466 Engineering and Industrial Management (founded in 1891 as "Cassier's Magazine"). A journal devoted to management, production, and economy in engineering, shipbuilding and all other branches of industry. Published weekly by The Louis Cassier Company, Ltd. London, 1919. vp, 9x12, illus. Egrg. Industl. Mgmt. 7/3/19 (London)
- 467 The Associated General Contractors of America. Vol. 1. No. 1. Members' News Letter — Monthly edition. July, 1919. Chicago, 1919. 20p, 9x12. *94j-AGCAm7/19
- 468 News Letter of the National Federation of Construction Industries: for the advancement of the industrial, commercial, professional and financial interests concerned with construction activities. Vol. 1, No. 1, June 24, 1919. Phila., 1919, 35p, 5½x8. *94j-ln-6/24/19

Miscellaneous

- 469 Progress report of Nova Scotia Water Power Commission, 1916. Halifax, 1917. 214p, 6x9, illus., maps. Same for 1917 and 1918. *7280.W291.1916-18
- 470 Transformers standards: types, frequencies, sizes, voltage ratings and taps, lead markings polarity. Reported by the Electrical Apparatus Committee of the N.E.L.A. May, 1919. N. Y., 1919. 22p, 8½x11. *6921.071ts
- 471 League of Nations. Speech of Hon. P. J. McCumber of North Dakota in Senate of United States, June 18, 1919. Wash., 1919. 32p, 6x9. *0292.M1395
- 472 International reconstruction. July, 1919 issue of Annals of American Academy of Political and Social Science devoted to the subject. 223p, 6½x9½. *029.Am35ir
- 473 The compensations of librarianship. A. R. Hasse. 1919. 24p, 6x9. *085.H277c
- 474 Resources, risks and remuneration [in library service]. G. W. Lee. (Reprint from Stone and Webster Journal, July, 1919.) Boston. 1919. 4p, 7x10. *085.L51re

COUPONS AND DIVIDENDS DUE

	Per Cent.
Aug. 1, Baton Rouge Electric Company, 5s, 1939	2½
Aug. 1, Eastern Texas Electric Company, 7s (Coupon Notes), 1921	3½
Aug. 1, *Edison Electric Illuminating Company of Brockton, Capital Stock, 8 per cent	2
Aug. 1, El Paso Electric Company, 6s (Coupon Notes), 1920	3
Aug. 1, *Fall River Gas Works Company, Capital Stock, 12 per cent	3
Aug. 1, Houston Electric Company, 5s, 1925	2½
Aug. 1, Key West Electric Company, The, 5s, 1956	2½
Aug. 1, *Lowell Electric Light Corporation, The, Capital Stock, 10 per cent	2½
Aug. 1, Pensacola Electric Company, 5s, 1931	2½
Aug. 1, *Public Service Investment Company, Preferred Stock, 6 per cent	1½
Aug. 1, Puget Sound Electric Railway 5s, 1932	2½
Aug. 1, Railway & Light Securities Company, Preferred Stock, 6 per cent	3
Aug. 1, Railway & Light Securities Company, Common Stock, 6 per cent	3
Aug. 1, Seattle Electric Company, The, 5s, 1929	2½
Aug. 1, Seattle Electric Company, The, 5s, 1930	2½
Aug. 1, Sierra Pacific Electric Company, 7s (Coupon Notes), 1922	3½
Aug. 1, *Sierra Pacific Electric Company, Preferred Stock, 6 per cent	1½
Aug. 15, *Keokuk Electric Company, Preferred Stock, 6 per cent	1½
Aug. 15, *Tampa Electric Company, Capital Stock, 10 per cent	2½
Sept. 1, *Blackstone Valley Gas and Electric Co., Common Stock (\$50 par)	2
Sept. 1, *Connecticut Power Company, The, Preferred Stock, 6 per cent	1½
Sept. 1, *Connecticut Power Company, The, Common Stock	1½

*Payable quarterly.

		Per Cent.
Sept. 1,	Edison Elec. Ill. Co. of Brockton (Coupon Notes) 5s, 1921	2½
Sept. 1,	Galveston-Houston Electric Company (Coupon Notes), 7s, 1922	3½
Sept. 1,	Jacksonville Traction Company 5s, 1931	2½
Sept. 1,	*Key West Electric Company, The, Preferred Stock, 6 per cent.	1½
Sept. 1,	Northern Texas Electric Company, Preferred Stock, 6 per cent	3
Sept. 1,	*Northern Texas Electric Company, Common Stock	2
Sept. 1,	Pacific Coast Power Company 5s, 1940	2½
Sept. 1,	Seattle Electric Company, The, Seattle-Everett, 5s, 1939	2½
Sept. 15,	*El Paso Electric Company, Common Stock ...	2½
Sept. 15,	Galveston-Houston Electric Company, Preferred Stock, 6 per cent	3

Dividend rates are based on the last declaration.

*Payable quarterly.

Quotations on Securities

OF

Companies under Stone & Webster Management

AUGUST 1, 1919

The Securities Department executes orders on commission for those wishing to purchase or sell.
Requests for information in regard to the companies will be answered promptly.

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Ab. & Rock., The El. { Notes, July, 1923 Lt. & Pr. Co. of	7%	99½	No	Pref	8%	120
Baton Rouge { Bonds, 1939 Elec. Co. { Notes, Jan., 1920	5% 6%	87 99½	6%	85		.....
Blackstone Valley Gas & Elec. Co.	5%	93½	*6%	95		
Cape Breton Elec. Co., Ltd.	5%	85	6%	75	3%	35
Central Mississippi Valley Electric Properties	No	Bonds	*6%	40		5 N
Chicago, Wilmington & Franklin Coal Co.			*6%	90		100
Columbus Elec. { Bonds, 1933 Co. { Notes, July, 1922	5% 6%	85 97½	6%	78		25
Columbus Power Co., The	5%	92		.....		.....
Connecticut Power { Bonds, 1963 Co., The { Notes, Jan., 1920	5% 6%	91 99½	*6%	85		
Connecticut Valley { Serial Bonds Lumber Co. { June, '22-'34	6%	97½				
Eastern Texas { Bonds, 1942 Elec. Co. { Notes, Aug., 1921	5% 7%	88 100	*6%	83	5%	61
Edison Elec. Ilg. { Bonds, 1930 Co. of Brockton { Notes, March, 1921 Notes, Dec., 1919	5% 5% 6%	100 100 100	No	Pref	8%	125
El Paso Elec. Co. { Bonds, 1932 Notes, 1920	5% 6%	92 99	6%	85	10%	100
Fall River Gas Works Co.	No	Bonds	No	Pref	12%	180
Galveston Elec. Co.	5%	85		.....		.....
Galveston-Houston { Notes, March, 1922 Elec. Co.	7%	99½	*6%	68 ^B / _L		15 ^B / _L
Galveston-Houston Elec. Ry. Co.	5%	85	No	Pref		.....
Haverhill Gas Light Co. (Stock par value \$50)	No	Bonds	No	Pref	9%	60
Houghton County Elec. Lt. Co. (Stock par value \$25)	5%	92½	6%	18½	5%	14
Houghton County St. Ry. Co., The	5%	98	No	Pref	No	Com

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Houghton County Traction Co.	5%	85	*6%	65		15
Houston Elec. Co.	5%	98 ^B / _L		.....		.....
Jacksonville Elec. Co.	5%	88	No	Pref	No	Com
Jacksonville Traction Co.	5%	85				
Keokuk Electric Co.	6%	100	*6%	80		.....
Key West Elec. Co., The	5%	80		.....		.....
Lowell Elec. Lt. Corp., The	No	Bonds	No	Pref	10%	155
Mississippi River Power Co.	5%	80 ^A / _B		52 ^A / _B		14 ^A / _B
Northern Texas Elec. Co.	5%	85	6%	80 ^B / _L	4%	^B / _L
Northern Texas Traction Co.	5%	91	No	Pref		.....
Pacific Coast Power Co.	5%	90	No	Pref	No	Com
Pensacola Elec. Co.	{ Bonds, 1931 Notes, Jan., 1921	5% 7%	85 99	50		5
Ponce Elec. Co.	6%	95	No	Pref		.....
Public Service Investment Co.	No	Bonds	*6%	75		20
Puget Sound Elec. Ry.	5%	85 ^B		.....		.....
Puget Sound Power Co.	5%	94	No	Pref	No	Com
Puget Sound Trac., Lt. & Pr. Co.	{ Notes, 1921	7%	101	*6%	65	16
Railway & Light Sec. Co.	{ First Series, 1935	5%	93½	*6%	85	6%
	{ Second Series, 1939	5%	92½			
	{ Third Series, 1939	5%	92½			
	{ Fourth Series, 1942	5%	91½			
	{ Fifth Series, 1944	5%	91½			
	{ Sixth Series, 1946	5%	91			
Savannah Elec. Co.	5%	60 ^B / _L		15		5
Seattle Elec. Co., The	{ 1st Mortgage, 1930	5%	95 ^B	No	Pref	No
	{ Cons. & Ref., 1929	5%	91 ^L			
	{ Seattle-Everett, 1939	5%	85			
	{ The Seattle Ry., 1921	5%	97			
Sierra Pacific Elec. Co.	{ Notes, Feb., 1922	7%	98½	*6%	55	5
Tacoma Ry. and Pr. Co.	5%	83	No	Pref		.....
Tampa Elec. Co.	5%	93	No	Pref	10%	†115
Whatcom County Ry. & Lt. Co.	5%	85	No	Pref	No	Com

Quotations are approximate. All stocks \$100 par value unless otherwise specified.

*Cumulative. †Ex-Dividend. A. Listed on London Stock Exchange. B. Listed on Boston Stock Exchange. L. Listed on Louisville, Ky. Stock Exchange. N. Common shares have no par value. X. Ex-rights.

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THE IMPROVEMENT ON BOSTON COMMON IN FRONT OF THE STATE HOUSE

STONE & WEBSTER

JOURNAL

SEPTEMBER, 1919

EDITORIAL COMMENT

Job and His Comforters

Job was a just and sensible man. He had lived righteously with his God, had raised a fine family, and had acquired great wealth. Yet great trouble fell upon him. In a single day his flocks were stolen or killed and his sons all destroyed by a whirlwind. Finally he himself was smitten with a sore disease. His worst trouble, however, came from his wife and neighbors. The former said, "Dost thou still retain thine integrity? Curse God and die." He disposed of her by calling her a foolish woman — a safer way to address the sex in those days than in these. Then came his three friends, Eliphaz the Temanite, Bildad the Shuhite, and Zophar the Naamathite, "for they had made an appointment together to go to mourn with him and comfort him."

They were not so easily disposed of, for they had plenty of time and were apparently fond of that sort of thing. They sat down with him upon the ground seven days and seven nights, and none spake a word unto him. Then Job began his immortal lamentations. As soon as he stopped to take breath Eliphaz began to lecture him. When he was through Job resumed his discourse, which was broken by Bildad, and later on Zophar had his word. The point that all these three friends made was that Job had sinned. It was self-evident, for no one could have come to such a pass without having affronted the Almighty. Now Job knew that this was nonsense. His mind was conscious of its own rectitude. He knew that he had done his best to live righteously, and to be just and honorable in all his dealings with his fellows. The remarks of his friends irritated

him beyond endurance, and in one of his moments of petulance we hear him exclaiming, "No doubt but ye are the people, and wisdom shall die with you." It may be remarked that many another since Job's day has breathed this ejaculation.

This country has not reached quite such sore straits as Job, but its resemblance to him is becoming more marked every day. By observing the laws which the Almighty seems to have established for the well-being of man, it has acquired great wealth, and it has lived as righteously as any nation that has ever existed on the face of the earth — in fact, it has sometimes called itself "The Chosen People." Today it is in a deplorable situation. Its wealth is being impaired, and like Job it is sick in body and soul. Like him it is receiving a vast amount of comfort in the shape of accusations that it has sinned. No individual, not even Job, is wholly righteous, and no nation, not even ours, is altogether perfect. Yet, taken as a whole, Job was a just and sensible man, and we so far have been a just and sensible nation. We can, if we like, follow the advice of Job's wife and curse God and die; or we can listen to his three friends and repent of a long list of sins which we are not conscious of having committed. But, on the other hand, we can flatly deny our guilt. If we have any self-respect left we shall pursue the latter course.

As a matter of fact, we are, as a nation, irritated almost to the point of exclaiming, "No doubt but ye are the people and wisdom shall die with you." As a nation, we are charged with guilt by a mysterious personality known as "The people," which is supposed to possess all wisdom, all righteousness and all common sense. Just what is this mysterious personality? Where does it reside? What are its qualities? What is its right to impose a mandate on the nation?

It is always a good thing at the beginning of a discussion to discover what you are talking about. In this case we are talking about "The people," but have we any idea what we mean by the term? What constitutes "The people?" Judging from the way the term is used, some of us are part of the people and others are not and naturally one would like to know what makes the distinction. The word "people" would seem to imply an aggregate of human beings, but apparently that is not at all the case. Obviously, therefore, "The people" is not the whole of an aggregate but only a part, and we are bound to ask why a part, even though it may be a small part, takes

full possession of the name and excludes all the rest. This can be explained only on the assumption that if you want a thing you have a right to take possession of it and exclude everybody else, if you can. This is not a satisfactory explanation, but it is the best that can be offered at the moment. If anyone has a better we shall be glad to listen to it.

Let us, however, adhere to old-fashioned ways of reasoning, and try to find out if any one class really has more right to be called "The people" than any other class.

There are more than one hundred million persons in this country, and they are divided into all sorts of classes. There are some who do not know very much, and who by lack of natural endowment never can know very much. There are some who are competent to know quite a little, but who do not care to exercise their mental faculties to anything like the full extent. There are some competent to know quite a little who do exercise their faculties to the fullest extent possible. There are some who have superior faculties without exercising them, and there are some who have superior faculties and who make the very most of them. There are some who are lazy and won't work, and there are some who are lazy and will work to a certain extent. There are some who are not altogether lazy but do not care to work very hard. There are some who are not at all lazy but, because of natural defects, are unable to work very hard. There are some who are not comfortable unless they are working to the limit of their endurance. There are some who have never acquired and are not competent to acquire more than a bare subsistence. There are some who are able to get a comfortable existence and not much more, and there are some who have the ability to acquire wealth beyond the dreams of avarice.

It is certainly a conundrum; yet if we were forced at the point of a gun to say which of these classes constitute "The people," we should perhaps have to mention those who mentally cannot work very hard and those who physically won't. This may not be the best answer, and frankly we do not pride ourselves on it. On second thought we might add another class, though we are not quite sure that "The people" is disposed or ever will be disposed to admit it to its ranks. We refer to a very considerable number of persons born in comfortable circumstances, fairly well and even excellently educated, voracious devourers of books and newspapers, fireside philoso-

phers, not very actively engaged in affairs, of humanitarian instincts (sometimes more fancied than real), men and women who fall into St. Paul's category of those who possess "zeal without knowledge."

This class constitutes a huge paradox. Anxious to promote the best interests of mankind to the fullest extent, it spends much of its time pouring oil on the troublous fires ignited by the ignorant and incompetent. From this class spring many of the pseudo-reformers, impractical persons, visionaries, who keep the world in hot water all the time. Heaven knows there is need enough of reform, but it is well to bear in mind that reform and revolution are not synonymous terms. The world has spent a good many thousands of years reforming itself — that is, changing itself from barbarism to civilization — and a vast amount remains to be done. A steady purpose has run through all the ages, productive of increasing comfort and finer living, but this purpose has been thwarted time and again by ill-judged, ignorant activities of persons whose aim was to better things.

Now the proof of a pudding is always in the eating. If we compare the world today with what it was when man first took up his abode in it, we shall find that there has been a great change. We do not any longer live in trees, and feed from the bushes, and perish from starvation or from the jaws and talons of wild animals. We all live in houses, we wear clothes, and we have some time at least to think of other things than saving ourselves from the cruel grasp of the elements. Practically everybody in this country, if he cares to work hard enough, can have a good deal more than this, can be really comfortable and have a great many pleasant diversions. At least everybody could have the opportunity to work and, barring a few exceptional instances, in comfortable circumstances. This is painting the picture in the most subdued colors. As a matter of fact, life is capable of being a very enjoyable thing for anyone who cares to make it so — which was not at all the case some thousands of years ago.

Now what has produced this change? Was it "The people?" We cannot answer that question because we do not know just what "The people" is or was. If we confine "The people" to the classes tentatively mentioned above, we should say that the credit does not belong at all to the people; it belongs to those who have instructed the people and stimulated it to

activity. If the world has grown more and more comfortable in the course of the centuries, it is for the most part due to guiding and stimulating minds. Yet if the phraseology of the day means anything at all, it means that those possessing such minds are not part of "The people." The persons not possessing guiding and stimulating minds are apparently the ones whom we mean when we use the phrase "The people," and they are the ones who, with the aid of the impracticable and ignorant dilettante, are accusing the nation of monstrous sins and announcing their intention of taking over the management of affairs. Job had this advantage over the American Nation, his accusers made no effort to take over his property and perform his activities. They pestered him with their talk, but allowed him to get out of his scrape as best he could.

What we have so far said amounts, of course, to a *reductio ad absurdum*, but that is sometimes the best way to make one see things as they are. "The people," as a matter of fact, comprises the whole of us; rich and poor, wise and ignorant, virtuous and wicked. No class has more right to the term than the other. "The people" is an aggregate of the whole of us, and the moment we dismiss that idea from mind we shall all come to grief. The whole of a thing is the aggregate of all of its parts. A part can never equal the whole and it never achieves the result of the whole. The many parts which make up the American people are definitely integrated. They have to be in order that the result which any one part may desire may be achieved. The richer and more intelligent part cannot accomplish its ends without the interpenetration of the poorer and less intelligent, any more than the poorer and less intelligent can achieve its ends without the interpenetration of the richer and more intelligent. They stand and fall together, and nothing could be more senseless than for the pot to be continually calling the kettle black. Let us see how this works out in practice.

This nation has come to a pretty pass. Everyone is dissatisfied; everyone is convinced that things have gone wrong. Like Job we have sat down among the ashes and are full of lamentations. Yet we know that we have not sinned in the way that our comforters describe. In the very nature of the case we could not have so sinned. If we had, the nation would not have been what it was when these troubles overtook us. Great wealthy nations are not created by dishonesty, though they are sometimes created in spite of it. In the fifteenth cen-

tury the world took a sudden start and began to improve its material conditions at a very noteworthy pace, and has gone on improving them from that day to this, particularly during the last century and a half. It has accomplished this by means of right-minded, quickened and persistent activity. Without such activity it would be where it was five hundred years ago. It has done this in the face of foolish monarchs, ignorant majorities, and impracticable reformers. Government, majorities and reformers (for the most part) have not made the world what it is. The world has been made rich and comfortable by honest, intelligent and common sense individuals. As its individuals are, so will a nation be. Ye shall know them by their fruits. A good tree cannot bring forth evil fruit, nor can a corrupt tree bring forth good fruit. The question, of course, is, can the fruit of our tree be called good? At any rate it is a great deal better than the fruit grown on national trees five hundred years ago, or one hundred years ago, or fifty years ago. Everything is relative in this world, and our goodness of today is relative to our goodness of the past.

If we compare the state of any class today with that of one hundred years ago we shall, if we are honest, say without hesitation that there has been a great improvement; consequently, "The people" (employing once more the jargon of the day) declares a vain thing when it accuses the nation of sin. To be sure, we are commanded on the highest authority, when we have done our best, to declare that we are unprofitable servants; but that includes "The people" as well as the rest of us. In fact, if we have sinned at all in this respect, the larger part of the blame rests upon "The people," because of its lack of intelligence and its unwillingness to work as hard as possible. The persons possessing brains and ambition could have made this nation a great deal richer and a great deal more comfortable if those possessing only mediocre intelligence and ambition had chipped in and helped more. A chain is no stronger than its weakest link, and certainly the wealth and greatness of a nation are regulated by the average intelligence and ambition of the people comprising it.

Of what use are intelligence and ambition unless they are directed to the general good? In this nation they must have been directed to that end, or we never should have accomplished what we have. While our average intelligence and ambition have not accomplished all that was possible, they have

at least not been consciously destructive. It is not against them that our criticism lies, but against ignorance and the spirit of destruction; against a declared purpose to tear our social and economic structure to pieces in order to reconstruct it on an entirely new, untried and egregiously selfish basis. To be sure, the end is impossible; and wholly because it is contrary to nature. Man did not fabricate the laws by which he operates. They were laid down for him by a power outside himself, and are as immutable as the law of gravitation. He can fret against them, but is completely at their mercy. Some one said recently that man is the least successful part of creation; that the brutes carry out the scheme of nature much more effectively than he.

That is a sweeping assertion, but possibly it will stand analysis. At any rate you never see the brutes attempting to work their own destruction, which is more than can be said of man. In distinction to the brutes, man was created with mind, but unfortunately in the exercise of mind he too frequently operates on a very vicious principle. Many persons suppose and say that one of the chief purposes of mind is to overcome nature, but mind never can overcome nature (except in the sense of overcoming man's own vicious human nature). Man gets results, not by overcoming nature, but by learning nature's laws and working in harmony with them. That is the object of science.

Everybody is not a scientist. In fact, only very few are. Yet "The people" listens respectfully to the scientists when they talk about physics or chemistry or electricity, but it has very little use for them when they talk about the science by which we all, from the lowest to the highest, get our bread and butter — namely, political economy. Bread and butter, however, constitute the basis of life, and it would seem as if the science that tells us how to keep soul and body together should be more highly esteemed than all the rest put together. But what do we see? We see "The people" flouting its ignorance in the face of those who have devoted their life to the study of the conditions by which the comfort and well-being of the people are regulated and enhanced. Occasionally we behold some besotted wretch drinking wood alcohol in ignorance or defiance of the ascertained fact that it means his death. As a rule, however, wood alcohol is let severely alone except for mechanical purposes.

One needs to be but a rudimentary scientist to know that if one does not work he will not produce anything, and that if the whole world does not work it will speedily perish from starvation. Yet all over the world "The people" is today saying that it is not going to work so hard in the future as it has worked in the past, and that it is going to consume a great deal more from now on than it has formerly. One would think it inconceivable that "The people" could talk so senselessly, yet the fact confronts us. Considering that "The people" has not heretofore been satisfied with the amount of subsistence which it has derived from its work, it requires more than the wisdom of Solomon to see how it can get a larger subsistence from less work. It is, of course, a madman's dream, a gruesome nightmare. Heaven speed the day when the world awakes and recovers possession of its faculties!

There are certainly signs of an awakening. We note, for example, in a European letter to the New York Evening Post the following statement by Trotzky, the Russian Bolshevik leader: "All your elected committees consisting of the best representation of the working class cannot replace a single technical expert who has studied in a special school. . . . We must now insist on the self-limitation of comradely activity . . . the working class must understand where it is necessary to give way to the expert, upon whose shoulders greater responsibility must be laid. It is necessary to give the expert a chance for free creative activity, because no capable and talented expert can do his work if he is made subordinate to a committee of workmen who do not know the work." Add to this the following from Lenine: "Whereas up till now the workmen have been autocratic masters of the factories and workshops, the interests of the revolution and of the workmen themselves require the unquestioning submission of the employees to the will of the manager of an industrial undertaking."

Certainly facts are stubborn things. Lenine and Trotzky have learned a thing which the wise have known from the beginning of time; namely, that knowledge is power. Eventually they, with "The people," may acquire the great incontestable fact of industry and social intercourse, that is, that the whip hand never is and never can be possessed by "The people," — it belongs to the few and not to the many. There has to be an oligarchy in every democracy, in every socialistic or communistic organization. This fact cannot be ignored

for any length of time without one certain result — the destruction of civilization and even of mankind. The mass of men have in the past lived their lives with only a subconscious recognition of this fact. Now the leaders of the masses are beginning to debate it. Some day they will discover the necessity of strenuously complying with it. And then all will be well with the world.

IMPRESSIONS OF THE ANTILLES AND BRITISH GUIANA

BY E. E. S. BIRTWELL

Leaving New York on the afternoon of May 28th, toward the latter part of the third day we crossed the Gulf stream, and ran into the beautiful blue water of the tropics, here a clear ultramarine, but deepening in color as we went south into a dark indigo. The following day we passed underneath the sun and thereafter, for some weeks, at noon it appeared directly to our north, a rather disconcerting feature, when trying to find one's direction by its position.

Late in the afternoon of the fifth day we sighted the mountains of St. Thomas, but owing to the difficulties of navigation in the Virgin passage, separating St. Thomas from the islands of Culebra and Porto Rico on the west, we did not attempt to make port until daylight, which allowed us to gain our first view and impressions of the town of Charlotte Amalie in the cool of the morning.

The approach to the harbor of Charlotte Amalie is through a narrow, cliff-bordered entrance about a quarter of a mile wide, opening into a beautiful land-locked harbor, about two miles long and a mile wide. On the left, as one nears, the town grows from the water's edge up the sides of steep hills and presents a very picturesque appearance, with the white plaster houses, red-roofed, built in the Spanish Colonial style. On the right are the docks constructed by the Germans before the war, possibly with the ultimate hope of later on acquiring the islands. These docks, about a half mile in length, are equipped with immense coal handling machinery and our Government is already making good use of these facilities. Owing to its being so completely surrounded by mountains, which shut out the breezes, the town itself is quite hot, and, like so many others in the West Indies, loses upon closer inspection a great deal of the interest stimulated by a view from the water. If it were not for a fine American drug store with its soda fountain and attendant features, the company of marines stationed there and the visiting sailors would probably find life very monotonous.

The population is practically all of negro extraction, and, strange to say, the language spoken is largely English, although



VIEWS OF THE ANTILLES

1. Coaling ship, Island of St. Thomas.
2. Fort de France, Island of Martinique.
3. Battery of small cannon, Pt. a Pitre, Guadeloupe.
4. Christianstad, Island of St. Croix.
5. "Milk Woman," Pt. a Pitre, Guadeloupe.

6. Market place, Pt. a Pitre, Guadeloupe.
7. Harbor, Island of St. Thomas.
8. Government Buildings, Charlotte Amalie, Island of St. Croix.
9. Fort de France, Pt. a Pitre, Guadeloupe.
10. French Harbor, Pt. a Pitre, Guadeloupe.

the island has so lately been in the possession of Denmark. Practically the sole industry of the island is bay rum and tourists, but the points of interest are not enough to make one wish to remain more than a day, although the island has great visions of becoming a winter resort for Americans.

A few hours' sail south of St. Thomas landed us at the port of Christianstad, on the island of St. Croix, or, according to the old Spanish (it was originally settled by the Spaniards), "Santa Cruz." This island was also acquired by us from the Danes.

From the water, the appearance is much different from St. Thomas, the country being more rolling and the hills not so high. A great deal of sugar and rum is produced, although it is feared that after January 1st this latter industry will be destroyed, in which case there appears to be not much hope, from an industrial standpoint, for either St. Croix or St. Thomas.

All of the banking on both islands is in the hands of the National Bank of the West Indies, which operates under an exclusive charter granted by the Danes, running till 1935, and this is apparently bound to retard progress to some extent on account of the exchange charges and lack of progress shown by the banking institution.

St. Croix was formerly a free port and consequently the cost of living under the old regime was very low, the finest of cigars from Cuba, manufactured products and spirits from Europe, being brought in without duty and distributed at very low prices. Since our occupation, however, the cost of living has gone sky-high, as in this country, and it is difficult to see how the negroes are able to live upon their small wages. Cocoa-nuts, 15 and 20 cents each, bananas 3 and 4 cents each, are examples; and as these two articles are largely used by the natives in other islands to help out their usual plain diet of potatoes and rice, it can be seen why the privilege of becoming a United States citizen is not universally appreciated.

In St. Croix we discharged our cargo into lighters, which were supposed to be towed ashore by the one motor boat in the town, but as this had gone on a strike, the large, heavy lighters had to be rowed ashore by two row boats, pulling tandem. Labor being scarce, and lighters few in number, our departure was necessarily postponed a day and a half beyond the time allotted to this port. It should be remarked here that the scarcity of labor is due, in a great part, to the increase in

wages coincident with our occupation. Formerly the negro laborers were paid 20 cents a day and were satisfied to work six days a week. Now they are paid 50 cents a day and cannot be persuaded to work more than three days a week; so, while our skipper was fretting and fuming and consigning St. Croix to many undesirable places, and the "hands" were lying around idle while the few lighters were ranged along the shore discharging one at a time, gangs of negroes who had worked their three days that week were hanging around making fun of the few who were working.

A visit to the place where the fish boats come in disclosed a variety of fish as brilliant in color as tropical foliage — beautiful greens and blues, and others a deep scarlet and golden color. We were also astonished at the prices these brought, a small fish about the size of a perch costing 15 or 20 cents. It is very evident that fish is not included in their diet every day.

Leaving St. Croix in the afternoon, we awoke next morning to find ourselves lying in the port of Basse Terre, off the island of St. Kitts. As we had only two hours here we did not go ashore, but contented ourselves with viewing the town and surroundings from the harbor.

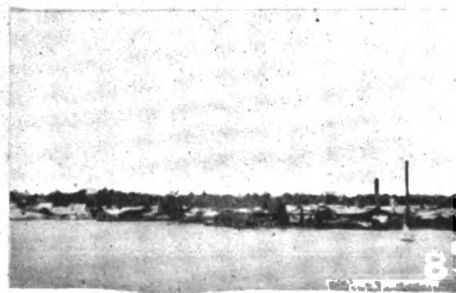
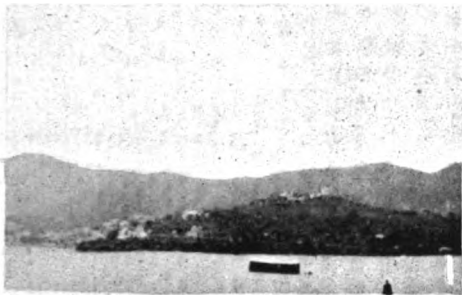
From the bay, St. Kitts has a most fertile appearance; Mt. Misery rising at the back of the town with its long, gradual slopes, covered with sugar plantations. The town itself is very picturesque from the harbor, and apparently stands closer inspection much better than most.

Leaving St. Kitts at nine o'clock in the morning, our voyage took us to the south, by the island of Nevis, with its cloud-capped volcanic mountain of the same name rising in the center like a giant pyramid.

We then turned east, with the island of Montserrat just visible on the southern horizon, and headed for St. John on the island of Antigua, which we reached late in the afternoon.

Antigua, like most of the islands visited, depends largely upon sugar for its right to exist. Although possessing a very beautiful harbor, from a scenic standpoint, St. John, the capital of the Leeward Islands, did not present any features of special interest in the time allowed there, although it does possess the largest Anglican cathedral in the islands, a huge, barn-like, wooden structure, high up on a hill, overlooking the harbor and sea.

Going on deck next morning, we found ourselves at anchor



VIEWS OF THE ANTILLES AND BRITISH GUIANA

1. Blackbeard's Castle and Town of Charlotte Amalie, Island of St. Thomas.
2. Park Hotel, Georgetown, British Guiana.
3. Northern end of Island of Dominica.
4. Christianstad, Island of St. Croix.

5. Nevis Mountain, Island of Nevis.
6. Botanical Gardens, Georgetown, British Guiana.
7. Basse Terre, Island of St. Kitts.
8. Pt. a Pitre, Guadeloupe.

in the reef-enclosed harbor of Point a Pitre, in the French island of Guadeloupe, with beautiful mountains rising on either side, but in front the dirtiest and most squalid looking town it has ever been my fortune to see.

There was considerable shipping in the harbor, taking off sugar and rum for France, especially the latter, which since the war has apparently become the national drink over there in place of wine, and a great trade in this commodity has been developed with Guadeloupe and the other French island of Martinique. Unlike the planters in some of the other islands, who settle down and make the place their home and beautify the towns so far as possible, the sole interest of the planters of Point a Pitre seems to be the acquisition of sufficient money to enable them to live in comfort at home, and they are making tremendous amounts under present conditions. The result is that the pretty squares and beautiful botanical gardens found in other islands, as well as the fine homes of the residents, are strangely absent, and ill-paved, foul-smelling streets, with the sewers running in the gutters, bespeak an entire absence of civic pride or care for the welfare of the inhabitants.

No necessity to inquire the way to the fish or meat market, unless one has a bad cold in the head; and upon arriving, if one has the strength to do so, one sees mangy dogs of all descriptions yelping around for any bits that may fall off the tables, and the produce itself so covered with flies as to be almost unrecognizable. In the large market place where vegetables and fruits are sold the conditions are equally bad, poor and decayed vegetables being everywhere prevalent, and the stalls of the fried fish and stewed meat and pastry sellers, catering to the negroes, are almost nauseating.

Unwilling to carry away such an unflattering impression of the town, we walked through the outskirts in all directions and visited some of the neighboring villages by automobile, but everywhere the impression was a most painful one.

Here, more than on any other island, we saw the natives suffering from the terrible and disgusting elephantiasis, — women and men alike.

We looked in vain for the fine homes of the wealthier classes. They apparently live for the most part in the congested centers of the town in houses possessing no special interest whatever.

Most of the banking in the town, and indeed in practically

all of the islands, is in the hands of the Royal Bank of Canada, who have been very enterprising in distributing their branches through the West Indies. Before their advent in Guadaloupe, the people apparently clung to the old French habit of hoarding their cash at home, but upon the opening of a reliable bank turned to its advantages in quick order. As an example, one of the officials of the bank told me that last February this institution opened a branch in Basse Terre, the seat of government of Guadaloupe, and at the end of the first month's operations regretfully counted deposits of only 80,000 francs, but after the second month the total had run up to over 3,000,000 francs, and has increased rapidly ever since.

Remaining over Sunday, we took the opportunity of attending services at the Cathedral, and were fortunate in that the Archbishop of Guadaloupe was present, which added a great deal to the impressiveness of the service, which was devoted to an appeal for funds for the reconstruction of France. The great building was filled to capacity, crowds even standing in the rear. About 95% of those present were negroes, or of negro extraction, but all with an attitude of the utmost reverence and devotion. It was really a very picturesque scene, with the elder women dressed in the most brilliant colorings and the younger in immaculate starched white.

The trial marriage, to which free thinkers have been giving so much thought and attention of late years, is apparently no novel theory so far as the negroes in the West Indies are concerned. There, among the lower orders, the man and woman live together for seven or eight years, and after assuring themselves during this period that they are entirely compatible, they decide to get married, the children of this union acting as flower bearers at the wedding. Men and women who, up to the time of their wedding, have gone about in the scantiest of clothing, minus shoes and stockings, will spend their entire savings in dressing for the occasion and in providing what, to some, is the only great festival of their lives.

In a little village some few miles outside of Point a Pitre, we were fortunate enough to witness one of these weddings. Starting with the procession from the house, the bride and groom followed by five little children from about three to eight years, all dressed in white. They were having the one great time of their lives, to be followed the next day, and thereafter, by the squalor and monotony that marks their existence.

Owing to a holiday and Sunday coming together, and the ever present shortage of lighters, we were forced to remain in Point a Pitre four and a half days; but at noon on the fifth, we headed for the beautiful island of Dominica, passing the headland of the West Coast about two o'clock, and from then until we reached the little town of Roseau, about five in the afternoon, coasting along the shore in the shadow of mountains so beautiful as to be beyond description.

Although not a large island, there are parts of the interior which have never been explored, due to the rugged and volcanic character of the topography. Even out to sea the easterly trade winds brought us the fumes of a boiling, sulphur lake, high up in the mountains, the tops of which are almost always shrouded in mist.

Despite these drawbacks, from an industrial standpoint, the island has gone ahead of Montserrat as a producer of limes, and it also grows considerable sugar. The town of Roseau is beautiful, situated in a valley with towering mountains at the back. It is a clean little place, with well laid out streets, some fine homes and a wonderful botanical garden. All kinds of tropical fruits and vegetables which can, with profit, be grown in Dominica, are shown in the gardens, as well as the foliage indigenous to the island, in an effort to attract settlers, and there we found oranges, lemons, nutmegs, cocoa, bananas and numerous others, all kept in perfect order, with well laid out lawns and walks.

There, too, we found a large playground with children playing, and well laid out tennis courts and cricket greens, a cricket match going on at the time of our visit, — all of this in marked contrast to the disreputable appearance of the public places in Point a Pitre, and despite the fact that the white inhabitants of the town could almost be counted on the fingers of one's two hands.

All too regretfully, we left Dominica after a brief stay, but with the promise of another day there on our return, and headed for Fort de France, the chief commercial town on the French island of Martinique.

Fort de France was the most imposing and largest town we had yet visited, surrounded by mountains on a beautiful bay; but upon going ashore we found many of the evidences of neglect observable in Point a Pitre, including open sewers running through the streets; but the evidences of poverty and filth were not so marked.

The historical fame of Fort de France arises chiefly from the fact that it was the birthplace of the Empress Josephine, a beautiful marble statue of whom stands in the midst of the Savannah fronting the harbor. But this, too, shows evidence of utter neglect, the Savannah being covered with long, coarse grass.

It was here that we had one of the most enjoyable experiences of the whole trip — an automobile ride from Fort de France over the mountains to Mt. Pelee and the ruins of St. Pierre.

The road winds out along a river bank where “les Blanchisseuses” may be seen, standing up to their knees and washing their clothes in the cold water, the banks for over a mile being covered with the clothes, spread out to dry. It is said that “les Blanchisseuses” are the only prohibitionists in the islands, their calling necessitating their spending a great part of each day in the cold mountain water, and prohibiting their indulging in any way in the native rum, which even the negro children seem able to enjoy.

About a mile out from the town the road began to ascend, and for the next nine or ten miles we kept climbing on low gear up into the mountains, having to stop and replenish the water in our radiator three times during this ascent; and then having reached the summit, there was the long gradual descent of about fifteen miles to the sea, where St. Pierre is beginning to rise from its ashes.

The beauties of this drive are beyond description — the most brilliant and beautiful tropical foliage, palms of every description, giant ferns standing 20 feet high, great clumps of bamboos, and the climate, as we ascended, being as variable as the foliage, until, at the summit of the pass, we ran into a cold rain storm, with the beautiful cultivated valleys obscured by the clouds lying below us; the road, never straight for more than a few hundred feet, in places made abrupt hairpin turns that would have been impossible of navigation by any large car, but which our Ford took as if made for the purpose. As some of these turns were made on the edge of the mountains, with nothing but a low embankment of earth between us and a drop of several thousand feet, one was a little nervous at first, and wondered what would happen if a front tire should go out at about this time. The roads, however, were in remarkably good condition, smooth and well drained, and the danger-

ous places protected by earth embankments. Instead of following our usual policy of building a new road and then letting it go to ruin before repairing, the authorities have adopted the simple policy of constant care, and we met numerous groups of laborers with small hammers, cracking up piles of stone by hand, seated along the roadside under the shade of banana leaves, and filling in any bad places in the road as they occurred.

Mt. Pelee is still smoking, which prevented us from getting a good view of its outlines. The wonderful confidence, or stupidity, of the people is in evidence at St. Pierre, where a short seventeen years after its destruction, it is beginning to build up again, but perhaps they figure that volcanoes, like lightning, will never strike twice in the same place; and then again, they have the example of Fort de France to go by, which, although completely destroyed some years ago, is now the most prosperous town on the island.

There is a shore road running from St. Pierre back to Fort de France, but we elected again to take the pass over the mountains. It would take many such trips to exhaust its beauties.

Leaving Fort de France next noon, at 5 o'clock we arrived alongside the wharf in the port of Castries, on the island of St. Lucia. The trip over was very interesting, passing along the coast of Martinique, by Diamond Rock, in the old days manned with a crew of British sailors, who hauled their guns up to its summit, and, commissioned as a British warship, was a constant source of trouble to the French fleet rendezvousing on the island. As we approached St. Lucia, we passed through fleets of native fishermen, in their small dugouts with spritsails, far out to sea after flying fish, great quantities of which are eaten on the islands and which are really very fine.

Castries' chief claim to distinction is as a coaling station for the British West Indian fleet, but it exports, as well, sugar and limes.

Leaving Castries, we passed down the west coast of St. Lucia, by the Pitons — gigantic peaks rising right up from the water's edge, to a height of over 3,000 feet — and then rounding the southern coast, we struck for the island of Barbados, lying about 100 miles to the east.

Barbados, or "Little England," as it is called, is the most favored of all the islands of the lesser Antilles. Hurricanes that devastate the shipping and plantations of the other islands pass

Barbados by untouched. Long droughts which periodically affect the other islands leave Barbados alone, and it is usually blessed with abundant rains. The sticky heat encountered in the other islands is absent in Barbados, which is refreshed by the easterly trades, which here blow almost constantly from one end of the year to the other.

From the sea, the appearance of the island is entirely different from that of the ones previously visited, the highest point being but a little over 800 feet. There is an entire absence of forests, although the beautiful flamboyant tree with its brilliant, scarlet flowers, found throughout the other islands, is here grown for its beauty and shade.

The island is very thickly settled, supporting a population of over 200,000, on about 178 square miles, and practically every acre outside of the towns is cultivated with sugar. The formation of the island is calcareous, with a layer of only eight to twelve inches of soil on top, but in spite, or perhaps on account of this, the sugar thrives abundantly, and since the war the planters or "estate owners," as they are called, are making money fast.

The white people of the island are more healthy in appearance than those on the other islands and the wealthier appear to live much in the fashion of English country gentlemen, with their town houses and shooting boxes, clubs and other social affairs. In fact, they appear much more punctilious in the performance of their social engagements or obligations than people of like station in their home country, or this.

I presume it is these little attentions to what might be called details that allows them still to maintain an interest in life on so restricted an area as that in which they live. At any rate, all of the inhabitants I met appeared to have an intense love for their island, and whenever visiting abroad constantly look forward to their return.

The negroes of Barbados seemed to be of a much higher class than any we had yet encountered, due, perhaps, to the schools maintained for their benefit in each parish and to the encouragement which is given to their education.

While socially the whites and blacks do not mix at all, in business and in Government they appear to get along in perfect accord, a negro being at one time Attorney-General of the island, and other Government positions being open to those members of the race who prove themselves worthy of them.

There are some very fine hotels on the island, notably the Marine, at Hastings, just out of Bridgetown, the capital, and Crane's, at a place of the same name, about fourteen miles out. They receive here annually a great many visitors, not only from the States, but from the Republics of South America, who find the climate more suited to rest and recreation than their own.

Now that the United States has entered upon a perpetual period of drought, the islanders are looking forward to an even greater influx of visitors during the winter, and are making preparations accordingly. With "swizels" at sixpence each, a great inducement is offered to some of our citizens who are finding present conditions unbearable. It is only to be hoped, however, that they do not adopt the abominable island custom of taking one before breakfast.

Striking a course southeast from Barbados, in about thirty hours the water changed from the beautiful blue, to which we had been accustomed since entering the tropics, to a dirty, muddy hue, due to the sediment brought down and carried far out to sea by the Orinoco, Essequibo and Demerara Rivers; and a few hours later we passed the small Demerara lightship and caught our first glimpse of the low shore of the province of Demerara in British Guiana, ten miles away, and headed for Georgetown, the capital, on the Demerara River.

The littoral of the province is below the sea level and is protected by an immense sea wall; the country accordingly is very fertile, but being well drained it is generally healthy.

Owing to its lying so low, a mist rises each night like a dense fog, and on this account all of the better residences are raised on posts about 10 feet from the ground.

Georgetown is a well laid out city of about 75,000 people, about half of whom are East Indian coolies and the rest negroes and whites, the negroes far outnumbering the whites, however. The original inhabitants of the country have all but disappeared, and the East Indians were brought in for work in the rice and sugar plantations. They form a distinct element, having their own stores and villages.

The coolie section of Georgetown is a very interesting place. It brings to mind some of Kipling's stories of India, with the men and women dressed in their native costumes, the women especially being extremely picturesque with their gold nose adornments and their arms and legs literally covered

with bangles, their whole resources evidently being put into jewelry. The East Indians have very finely formed features and figures, but the women are quite small, while the men are of medium height. It was noticeable, however, that all of the positions of minor responsibility — policemen, postmen and motormen and conductors on the street cars — were held by the negroes, which seemed to denote a higher order of intelligence on their part.

There are a great many of the merchant class of Chinese in the province, but we did not observe any of the lower orders of this race.

Our stay in Demerara was entirely too brief to allow us that study of the country and its inhabitants that we should have liked — we felt that several weeks could be very profitably put in. We had time, however, for a brief visit to the beautiful botanical gardens reached by the street car line, about two miles out from the City, and were rewarded with a fine display of the beautiful *Victoria Regia*, with its immense leaves four to five feet in diameter, floating on the canal running through the gardens, and lotus in great number growing along the banks.

Our trip north was accomplished in much less time than our trip south, for, barring a three days' stay at Barbados, our stops at the islands were very brief.

All in all, however, it was a most interesting trip and has furnished food for a great deal of thought since, especially in regard to the future of the islands, with the constantly decreasing number of whites and the ever increasing negro population.

Aside from Barbados, the climate is certainly not suited for the white race, and though the high prices for sugar since the war have brought a revival of interest among Europeans in the islands, still it is not hard to look forward to the time when, with the resumption of normal prices and consequent lack of profits, the white population will gradually disappear, leaving the islands in the absolute possession of the negroes and half-breeds who flourish so well. Under a white leadership in Barbados, the negroes have shown a certain aptitude for Government, and it may be that with increased educational facilities in the other islands they may in time be able to look after their own affairs; and as the islands are a drain, rather than a source of income to the European Governments at present in control, they may be cut loose as a series of negro republics, after the fashion of Haiti and San Domingo, with

a European mandate sufficiently strong to prevent their developing the conditions of anarchy and civil war which prevailed up to the time of our interference in the affairs of the only negro republics in the western hemisphere.

As our stay on each island was so brief, it would be unfair to offer any opinion as to conditions as they exist on the islands; but the above problem, I think, will at once impress anyone visiting the islands for no matter how brief a period. It is not in the nature of things to believe that an educated negro population is forever going to allow itself to be under the political control of a very small minority of whites, and on the other hand things are bound to be very uncomfortable for the few whites with political control in the hands of the blacks. Martinique has already seen evidences of this clash of interests and it seems inevitable that the condition is bound to intensify.

THE HIGH COST OF LIVING—ITS RELATION TO THE PRESENT LABOR SITUATION

BY F. P. ROYCE

A crisis exists today in this country, and throughout most of the world, arising from the high cost of living and the rapid, continued advances in wages due in a great measure to it.

Are not the chief causes of this condition, and the cure for it, so apparent that those high in Government, and the labor leaders, whose influence is great, will devote their energies to creating a thorough understanding of them on the part of all the people?

Is it not the root of the matter in the reduced world's supply of all necessities, caused by the increased demand for all materials for war purposes and the shortage of labor, in conjunction with greatly increased wages unaccompanied by a proportionally increased production per man employed?

What has happened is this: In the winter and spring of 1913-1914 we had a time of business depression — supply outran demand; prices of materials were low. Then came the war, and almost immediately, at a time when millions of men were being transferred from productive pursuits to those of destruction, the demand for all necessities of war grew enormously, involving a sacrifice in the production of the things needed for ordinary life.

Factories which had been producing the necessary machinery and structural material for the usual requirements of life were turned over to the production of munitions. Mills on which we relied for the production of the materials used for clothing were devoted to the making of uniforms for the men in service, and a far larger amount of food was needed for each man in service than was ordinarily required. The stock of requirements for ordinary life was almost completely drained.

Old sources of supply were wiped out entirely and new ones were necessary. These requirements could not be fully met and the inevitable happened.

The demand for most things needed in life exceeded the supply and prices began to soar.

With the consequent increased cost of living and shortage of labor, increases in wages occurred. But the increase in wages was not accompanied by a proportional increase in production

and consequently the cost of all necessities kept on growing.

With such a great shortage in supply, profiteering was comparatively easy. Undoubtedly much of this occurred and still continues.

But profiteering has been a minor factor, and so far as its effect on the country as a whole is concerned, is to a great extent corrected by our present method of taxation.

A far more important factor and one much more difficult to provide for is the one mentioned of increasing wages and falling production per wage earner.

In many branches of industry the laborer, receiving more than he ever had before and not realizing that he needed it to meet the increased cost of his requirements, worked for a part of the time only.

In almost all kinds of work, along with the increased wage came the demand for reduced hours of work. Such a course merely follows a circle and the wage earner, receiving more money, but having to meet a correspondingly increased cost of living, is no better off and never will be. In fact, increased wages to meet increased cost of living followed by shorter hours and lessened production merely results in still greater disparity between what a worker receives and what he may spend for living.

This is not a theory, it is a fact capable of mathematical demonstration. Substantially all of the cost of everything we need is due to labor, the portion of the cost due to providing necessary capital being comparatively small and much more constant or uniform.

The cost of our food and of our clothes is principally due to labor. Labor tills the soil, handles the crops of grain or cotton, fabricates the material, transports it to market and distributes to the consumer.

Now if all men were to receive a daily wage, say, of three dollars, at any one time, and were obliged to spend that amount to live, and then were to demand a wage of four dollars or a reduction in their hours of work with a proportional reduction in production, the cost of everything they have to buy, being due principally to labor, would be increased by almost a like amount, and they would then be obliged to spend four dollars per day.

If, on the other hand, the increase from three dollars to four dollars per day were not made universally, but were granted only to those who produced approximately one-third more

than the others, the increased production would then keep pace with the wages and the cost of the finished product would not be increased by the additional wages paid to those only who earned it. The man who continued to receive only three dollars per day could buy as much with it as before, but the man who produced more could spend three dollars to live and save one.

Is it not a sound basis, and the only reasonable one for the payment of wages, that every man who gives his best shall receive an amount sufficient to well meet the necessities of life and that those who receive more shall do so only by their greater ability, physical or mental, to create or produce more?

Every man should have sufficient time free from work for physical and mental rest, and for life with his family and friends. No healthy man should be obliged to work for a longer period than is consistent with his greatest efficiency. But efforts are now being made to reduce the hours of labor in many instances to a point which will surely result in a serious loss of production and in undesirable hours of idleness.

All workers should realize that the development of labor-saving devices in manufacturing or in transportation will result in as much benefit to them as to the world in general.

This brings to mind the much studied problem of "profit sharing." The obvious desirability of such a plan, if it can be worked out in a practical way, calls for its continued study. There are fundamental difficulties, however, which have always interfered with "profit sharing" plans.

There can be no true partnership when all partners do not share losses as well as profits. Labor has not been ready to share losses, and probably is not in a position to do so.

Profits can only be determined after comparatively long intervals, and with the rapid changes which continually occur in the personnel of every force of men, a distribution of profits or losses determined at the end of a year, particularly among men who had severed their connections with an organization during the year, would be almost impossible. Capital has to run the risk of loss and therefore is entitled to the chance of profit.

The three things essential to a reduction in the cost of living are:

- (1) The restoration of the pre-war producing capacities of all countries, arranging for such financial credits as may be necessary to accomplish the result.

(2) An adjustment of wages so that, beyond a sufficient living wage for reasonable hours, increases will depend on increased production.

(3) Stopping by proper legislation profiteering, which can occur only during a time of abnormal conditions like the present, when the world's supplies are reduced to a point of danger.

THE INVESTMENT BANKER'S INTEREST IN PUBLIC UTILITIES*

BY RUSSELL ROBB

In all the discussion of affairs that are of sufficient size and importance to be of public interest, there is searching inquiry for some hidden touch of a private interest. It seems to be assumed that if any private interest is to be benefited or even safeguarded by a solution of difficulties, by this fact alone the representatives of this private interest are disqualified as witnesses or advisers and should even be suspected of a selfish attempt to profit at the expense of the public.

There should be no criticism, of course, of attempts to discover conflicts between public and private interest. They cannot be allowed to conflict, but it should be recognized that both public and private interests may run a long way in parallel lines and much is lost in the consideration of problems if those who have the greatest familiarity with the essential factors are to be disqualified and eliminated from the discussion.

The investment bankers have a profound interest in the problems that have come so thick and so fast to the public utilities of the country. These bankers have for their business the searching out of people who will invest instead of spend, who will be content to forego present goods and satisfactions, if instead they may have a little more of them to use or give to others in the future. The bankers are always searching for those who prefer to have, a year from now, \$1.05 or \$1.06 or \$1.07 rather than \$1.00, now. The more people they can find who wish these opportunities and the more people they can fit with suitable opportunities, the more service they can render. This service being paid for, the greater number of investors they find and serve acceptably, the greater grows the investment banker's business, position and fortune.

The securities of public utilities have been of great interest to the investment banker because he has seen in them suitable opportunities for his customers. He has seen that the services rendered by the utilities were necessities of modern life, that the demand for the services fluctuated comparatively little

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in good times and bad, that the capital invested in them was represented by substantial structures, and that the need for the services could be expected to continue for a long time into the future.

These features are important to the real investor. He is not attempting to "double his money" in a year, but he is expecting to be certain to have his original \$1.00, practically certain of as much as \$1.05, and with very little progressive uncertainty, \$1.06 or \$1.08.

Integrity of the investment, which is so important to the investor, is equally important to the investment banker. His business, if it is successful and growing, is peculiarly one of recurring dealings with old customers, but these dealings do not continue if the securities he sells prove to be insecure. When a security that is sold is based on a kind of property that becomes unstable in value because there are factors that are changing and indefinite, and cannot be weighed by the use of knowledge and judgment, then such a security can no longer be used by the banker in his dealings.

Security of principal and constancy of return are the two virtues of an investment that interest the investment banker. Given these and his road is clear. He will then search out and he will hold in future business all those who are willing to help to create new instruments of production if they can be confident of receiving 5, 6, 7 or 8 cents in a year from now as a reward for refraining from spending \$1.00 now. Not many are willing so to refrain, for this reward. That is why it is so important for the good of society that all the willing ones are found. It is the way we get our instruments of production. These are the people who "grubstake" the worker.

It is here that one sees how closely parallel are the public interests and the investment banker's interest in our utility problems.

Our utilities furnish the great community necessities; transportation, water, light, heat, power and electric communication. The public is vitally interested in good service from these utilities and in their efficient operation, and it is interested to have capital invested in them at low rates of return because good service, good operation and moderate pay for capital induces the greatest use of these desirable services; and this greater use in turn increases the well-being of communities.

There is no conflict here between the public interest and the investment banker's interest. The investment banker, for the most successful conduct of his business, must have the very conditions desired by the public.

His business is to find capital seeking investment and to supply it to enterprises that demand it for increasing their facilities to do business. He must have the demand from the enterprises in order to have securities to sell to investors as they can be found. When conditions are such that enterprises are apparently secure in their prosperity, investors will furnish capital at moderate rates of return, and it is when capital is furnished at moderate rates of return that enterprises expand and keep expanding as long as they can make a margin of profit over the cost of the capital required to do the expanding.

Public utilities were largely built and developed when there was little doubt of their security and when capital was furnished at moderate rates. Most of their business depends for expansion upon a moderate charge for capital.

The investment banker consequently has his greatest business in public service securities when investors are willing to take them at low rates of return. With a demand existing, with prospective business in sight, assuredly the investment banker will search diligently for good opportunities to purchase securities to sell again, and this stimulates additional capital expenditures of existing utilities and the creation of new ones. Let such a condition come again, or better still let the security of principal and constancy of return be so well assured that investment could be attracted at rates lower than ever before and we should at once see the most healthy kind of stimulation to the creation of all kinds of permanent plants and structures for the purpose of producing old types of service more cheaply or better, or of rendering new types of service of various kinds that will enable people to live their lives more fully or secure old facilities at less sacrifice.

A TEST OF AN AMMONIA LIQUOR CONCENTRATOR

BY WARREN D. STEWART*

The following test of an ammonia liquor concentrator was made with the object of finding all the information possible about the operation of the apparatus as normally operated. The still was manufactured by The Gas Machinery Company and consists of seven sections of volatile still, five sections of fixed still, and an absorber of four sections, all 36 inches in diameter. The liquor is fed to the still from an overhead constant-level tank through an interchangeable orifice which regulates the rate of flow. The liquor passes from this orifice through lead coils in the two upper sections of the absorber, where it is preheated, to the top of the volatile still. The steam enters the bottom of the fixed still through an orifice steam meter and an "H. & M." temperature regulator, the bulb of which is in the top of the absorber. The waste liquor overflows through a U-seal to the sewer. The rated capacity of the still is six gallons per minute of weak ammoniacal liquor of 2% strength of NH_3 . A recording thermometer in the top of the absorber keeps a record of the variation in temperature there. The test was conducted by E. D. Stebbins and H. F. Eastman, student engineers at the plant.

Method of Making Test

The duration of the test was eight hours. The operation during the test was the same as in the daily operation of the still. Measurements were made in gallons and converted to a basis of weight. Differences in temperature were disregarded as being within the limits of accuracy in measurements.

The amount of *weak liquor* supplied was determined by measurement of the supply well, a covered concrete well — 11'6" long and 13' wide. All openings were cut off except the supply to the concentrator, and the overflow from the concentrator supply tank was returned to this well. Hourly samples of weak liquor were taken at the overflow of the constant-level tank.

The *concentrated liquor* was run into the concentrated tank and was measured at the start and finish of the test. Hourly samples of concentrated liquor were taken at the overflow outlet of the absorber.

*Works Superintendent, Fall River Gas Works Co.

Waste liquor was run into a 224-gallon calibrated tank, and an ash can was used as a relief tank when measuring and emptying the calibrated tank. This necessitated the raising of the overflow mentioned below.

Lime solution was measured in the mechanically agitated mixing tank. This tank was filled once during the test, the amount of lime in the solution present at the start of the test being considered as the same as that used in filling the tank.

The *steam* supplied to the fixed still was measured by passing it through a one-half inch orifice meter.

The manufacturer's formula for this is: —

(lbs. steam per minute) equals $0.1565 \times$ (absolute pressure at entrance to orifice).

The *quality of the steam* was computed from the readings of a calibrated pressure gauge and a throttling calorimeter made at the plant for the purpose. These were located in the steam header over the fixed still.

The *cooling water* was measured in two calibrated tanks, after passing through the absorber.

Special Conditions

The steam valve at the bottom of the lime leg under the volatile still was barely cracked.

The waste liquor overflow was raised about eighteen inches, to allow the liquor to be run into a measuring tank. This increased the pressure in the bottom of the fixed still from 0.6 to 1.8 lbs. per sq. inch, gauge pressure. It is believed that this did not materially affect the operation of the still.

The average Twaddle hydrometer reading of the concentrated liquor was 16.9°, the lowest being 16.0° and the highest 18.0°. The cooling water had a temperature of 58.9° F. at the inlet to the absorber, and 91.9° at the outlet. The average temperature in the top of the absorber was 179° F.

RESULTS

TABLE I — TOTALS

Duration of test, 8 hours

Weak Liquor

Volume pumped to still	3069 gal.
Specific gravity (61.7° F.)	1.0182
% NH ₃ by weight	1.980
% free NH ₃ by weight	1.873

Weight of weak liquor (calculated).....	26,081 lbs.
Weight of NH_3 in weak liquor.....	515.41 lbs.
Temperature of weak liquor entering concentrator.....	79.0° F.
Concentrated Liquor	
Volume of liquor made.....	295 gal.
Specific gravity (65.3° F.).....	1.0984
% NH_3 by weight.....	18.45
Weight of concentrated liquor (calculated).....	2699 lbs.
Weight of NH_3 in concentrated liquor.....	498 lbs.
Temperature of concentrated liquor leaving concentrator.....	105.9° F.
Waste Liquor	
Volume of waste liquor.....	3620 gal.
Specific gravity (61.7° F.).....	1.0092
% NH_3 by weight.....	0.006
Weight of waste liquor (calculated).....	30429 lbs.
Weight of NH_3 in waste liquor.....	1.83 lbs.
Temperature of waste liquor leaving concentrator.....	210.6° F.
Lime Solution	
Volume of lime solution (60.1° F.).....	156 gal.
Specific gravity (68° F.).....	1.031
% lime by weight.....	9.0
Weight of lime solution (calculated).....	1341 lbs.
Temperature of lime solution entering concentrator.....	60.1° F.
Amount of solid lime used.....	120.3 lbs.
Steam	
Average pressure at inlet to orifice.....	60.5 lbs. per sq. in.
Average pressure in base of fixed still (under normal conditions)	0.6 lbs. per sq. in.
Weight of steam supplied.....	5650 lbs.
Volume of condensed steam (calculated).....	678 gal.
Quality of steam in main.....	99.5%
Pressure of steam in main (gauge).....	95.9 lbs. per sq. in.
Barometric pressure (30.12 in. Hg).....	14.79 lbs. per sq. in.
Heat above 79.0° F. (incoming weak liquor temp.) each pound of steam	1130 B.t.u.
Cooling Water	
Volume of cooling water.....	5401 gal.
Weight of cooling water (calculated).....	45,038 lbs.
Inlet temperature.....	58.9° F.
Outlet temperature.....	91.9° F.

TABLE 2 — RESULTS

	Vol.	Wt.
Weak liquor concentrated per minute.....	6.38 gal.	542 lbs.
Weak liquor concentrated per hour	383 gal.	3254 lbs.
Concentrated liquor made per hour	36.9 gal.	337 lbs.
NH_3 concentrated per hour		62 lbs.
Lime solution used per hour	19.5 gal.	168 lbs.
Steam used per hour	85 gal.	706 lbs.
Boiler horse-power of steam used.....		24.9 B.H.P.

Waste liquor made per hour	452 gal.	3804 lbs.
Cooling water used per hour	675 gal.	5630 lbs.
Solid lime used per hour.....		15.0 lbs.
Lime solution per lb. of NH_3 concentrated	0.31 gal.	2.69 lbs.
Solid lime per lb. of NH_3 concentrated		0.24 lbs.
Solid lime per lb. of fixed NH_3 liberated		4.35 lbs.
Steam used per lb. of NH_3 concentrated		11.3 lbs.
Steam used per gal. of weak liquor.....		1.84 lbs.
Weak liquor per lb. of solid lime used		25.5 lbs.
Cooling water per lb. of NH_3 concentrated.....		10.8 lbs.

TABLE 3 — QUANTITY BALANCES

Input	Vol.	Wt.
Weak liquor	3069 gal.	26031 lbs.
Lime solution	156 gal.	1341 lbs.
Steam.....	678 gal.	5650 lbs.
	<u>3903 gal.</u>	<u>33022 lbs.</u>

Output

Waste liquor.....	3620 gal.	30429 lbs.
Concentrated liquor.....	295 gal.	2699 lbs.
Unaccounted for (—31% by vol., —29%) (by wt.)	—12 gal.	—96 lbs.
Total	<u>3903 gal.</u>	<u>33032 lbs.</u>

The small amount of steam added to the base of the fixed still is disregarded.

 NH_3 Distribution

NH_3 in weak liquor.....	515.4 lbs.	
NH_3 in concentrated liquor.....	498.0 lbs.	96.7%
NH_3 in waste liquor	1.8 lbs.	0.3%
NH_3 unaccounted for	15.6 lbs.	3.0%
Total.....	<u>515.4 lbs.</u>	<u>100.0%</u>

TABLE 4 — HEAT BALANCE

Based on incoming weak liquor temperature of 79.0° F.

Input			
Heat received from steam..	803,565 B.t.u. per hour,	24.0 B.H.P.	
Output	B.t.u./hr.	B.H.P.	%
Lime solution	378	0.01	0
Waste liquor.....	500,606	15.00	62.5
Concentrated liquor	10,141	0.30	1.3
Cooling water.....	185,823	5.50	22.9
Balance (radiation, etc.)	106,613	3.19	13.3
Total	<u>803,565</u>	<u>24.00</u>	<u>100.0</u>

Unaccounted For Balances

The unaccounted for liquid, about 0.3%, is probably due to small unavoidable errors in the measurements of the various substances.

The heat unaccounted for, 13.3%, was without doubt

principally due to radiation from the concentrator. It is possible, also, that there is a slight variation in the size of the orifice used to measure the steam introduced into the fixed still. A small part of this is the heat in the steam introduced into the lime leg, which was disregarded.

The engine driving the lime pump and lime tank stirrer consumes 60 lbs. of steam per hour. This was determined by condensing and weighing the steam.

This test was run under ordinary operating conditions, and the results probably could be improved. They are published, however, with the object of giving information of what performance may be expected from a still of this style.

BACKWATER ON THE SKUNK RIVER

BY ALBION DAVIS

The Skunk River dealt with here is a stream some 300 feet in width which empties into the Mississippi in the upper reaches of the lake created by the Keokuk dam. Its drainage, which lies in Iowa, is nearly 200 miles long and very narrow. In its lower reaches it flows with good velocity and in a continually shifting channel through some of the richest farm land of the country. Almost yearly, however, the stream goes out of its banks spreading over many square miles of the flat bottom land.

The Mississippi River Power Company has a particular dislike for the river because, with the building of the dam, the farmers affected by its rampages were only too ready to lay all their troubles with the river, at the Power Company's door. Not only this, but the sudden floods that drop from the river directly into the lake cause considerable uneasiness. Backwater from the Keokuk dam extends to Burlington, 40 miles above the dam, during high water, and further during very low water. The Skunk River enters the lake about 8 miles below Burlington and is affected by the dam by amount of backwater which varies from less than a foot at extreme high stages to several feet at very low stages. The fact that there was a certain amount of backwater from the dam at the mouth led farmers to believe that it was the cause of overflow even as far back as Augusta.

A complete survey was made of the 12 mile section between the small town of Augusta and the mouth, and the limits of backwater defined. The investigation which was carried out at a cost of about \$500 proved a very interesting one. The fascination of the problem to the writer was in the definiteness of the results attained. It was thought that the results and the methods employed to secure them might prove not only of interest, but of value to other engineers.

The river drains 4,350 square miles of rather rough country. In its lower reaches it has an average width of 300 feet and a slope of 1.3 feet per mile. A characteristic of the river is its quick rise after rains and its well sustained flow for several days. Its flow, which is normally about 400 second-feet, has been as low as 100 second-feet and as high as 32,000 second-feet within



FLOOD ON JUNE 11, 1918 — Showing extent of overflow north of Skunk River $5\frac{1}{2}$ miles above the mouth



A TYPICAL OVERFLOW SECTION — Looking south from the River $1\frac{1}{2}$ miles above the mouth

the last few years. Two United States Geological Survey gaging stations are maintained on the river, one at Coppock, Iowa, and the other at Augusta. The station equipment at the latter point consists of a standard chain gage attached to the downstream handrail of the one and only highway bridge. Current meter measurements are made from the bridge for medium and high stages to establish what has proved to be a permanent flow rating curve due to the existence of the remains of an old mill dam a few hundred feet below the bridge. One of the photographs shows this bridge during the flood of June 11, 1918, when about 25,000 second-feet were flowing under it.

The lower section of the river to which the backwater study was confined takes a rather sinuous course on its way to the Mississippi. The big bends in its course will be exaggerated on every flood until finally the loops will become so pronounced that a very high flood will cut across the neck of the loop and straighten the channel. This stretch of river is treacherous during flood. Full grown trees, dropped into the river when a bank is undermined, will go rolling easily down the river nearly as fast as the current. At one point that was noted particularly, two boats had been left high and dry on top of the bank tied to 8-inch cottonwood trees. Two mornings later the trees, boats, and all, including 6 feet of the bank, were gone.

The problem to be solved seemed at first to be hopelessly complicated by the fact that the river was subject to backwater from the Mississippi before the dam was built, let alone the fact that the relation between stage and discharge was continually changing. These two facts precluded any attempt to compare conditions before the dam with those subsequent to its building. The solution was to be obtained by a careful analysis of present conditions followed by computation for the natural stages without the dam. This method would ordinarily leave some doubt as to accuracy because the final results depended on theory. In the case at hand, however, a happy coincidence of relative stages in the two rivers enabled an absolute check on the computed results. Profiles were obtained in the field which showed the actual limit of backwater precisely coincident with the computed limit for that particular stage.

The amount and extent of backwater from the Keokuk dam up the Skunk River is dependent, first of all, on the amount of backwater the dam causes at its mouth; secondly,

on the stage of the Mississippi; and thirdly, on the stage of the Skunk River. The natural stage of the Mississippi causes a varying amount of backwater on the Skunk, depending on the stage of the latter. The dam adds its effect to this natural backwater.

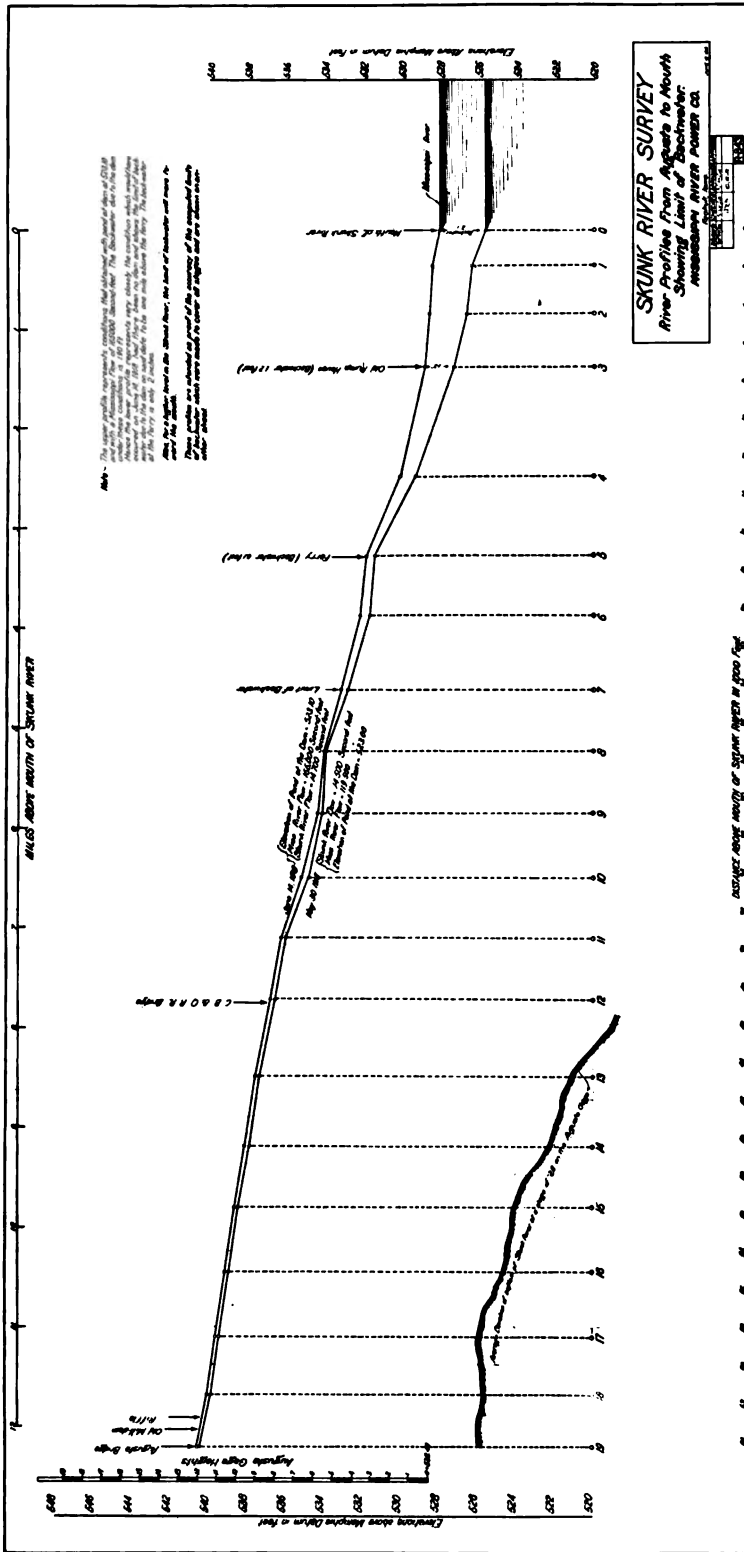
The first part of the problem, namely, the effect of the dam at the mouth of the Skunk River has been very completely worked out for all conditions of pond level and flow from original computations by J. R. Freeman in his admirable analysis of backwater in Lake Keokuk. Both the original computations by H. L. Cooper and by J. R. Freeman have subsequently been borne out by the actual water levels. The same general method of analysis was used for the study of the Skunk River.

The remainder of the problem required the obtaining of field data involving soundings, several profiles and measurements of flow for low, average, bank full and extreme stages to cover the entire range of actual conditions. From these field data it was possible to compute the hydraulic elements for the individual reaches of the river between sections which were chosen so as to be about one-half mile apart. The method of computation was to first figure "c" in the Chezy formula, $v = c\sqrt{rs}$, and then from it to figure the coefficient of roughness of channel bed "n" in Kutter's formulae for "c",

$$c = \frac{41.65 + \frac{.00281}{s} + \frac{1.811}{n}}{1 + \left(41.65 + \frac{.00281}{s}\right) \frac{n}{\sqrt{r}}}$$

The next step was to obtain the profiles for conditions without the dam. To do this the coefficient of roughness was assumed to remain constant for the relatively small change of stage due to backwater and the new slopes then figured back from the mouth of the river, section by section, until the natural profile met the actual profile. Four actual and computed profiles were obtained covering in general all stages.

Although the above method of computation is laborious, it will be hard to find one which can improve on it because of the opportunity it gives to analyze the situation step by step and to make due allowances for irregularities of channel, obstructions to flow on the banks and effect of overflow. A number of general backwater formulae have been developed, but



have not come into extensive use because of the impossibility of making them fit the hopeless irregularities of the average river.

Field work for the survey was started as soon as the river opened up in the Spring of 1918. Fortunately, good contour maps of the lower section of the river were available. From these it was possible to obtain accurate channel distances without the necessity for a separate survey. The first step of the field work was to pick out the sections and locate them on the maps. Then bench marks and reference points were established at each section so that water elevations could be readily obtained by a single set-up of the level when making the profiles later. After the bench marks and sections were established, precise levels were run from the mouth of the river to Augusta, tying in all the bench marks on the way accurately.

While the river was still low, it was sounded at each section from a boat. A $\frac{1}{4}$ -inch trot line was stretched clear of the water from bank to bank and so that it could be reached from the boat. Starting at the reference point on the bank 10-foot intervals were laid off along the line by tape and a clothes pin set as a marker. Then soundings were taken with an ordinary level rod and the pins collected. This method was as accurate as using a marked wire which would not be subject to stretch and got away from the difficulties of handling a wire. The sections were next completed to elevations well above the highest floods by levels. The relative obstruction to flow offered by trees and brush in the overflow sections was estimated in the field at the same time so that close estimates of main channel flow could be made in the computations. In all, 19 sections were completed in this manner and plotted with full notes. Then the hydraulic elements were tabulated on the same sheet.

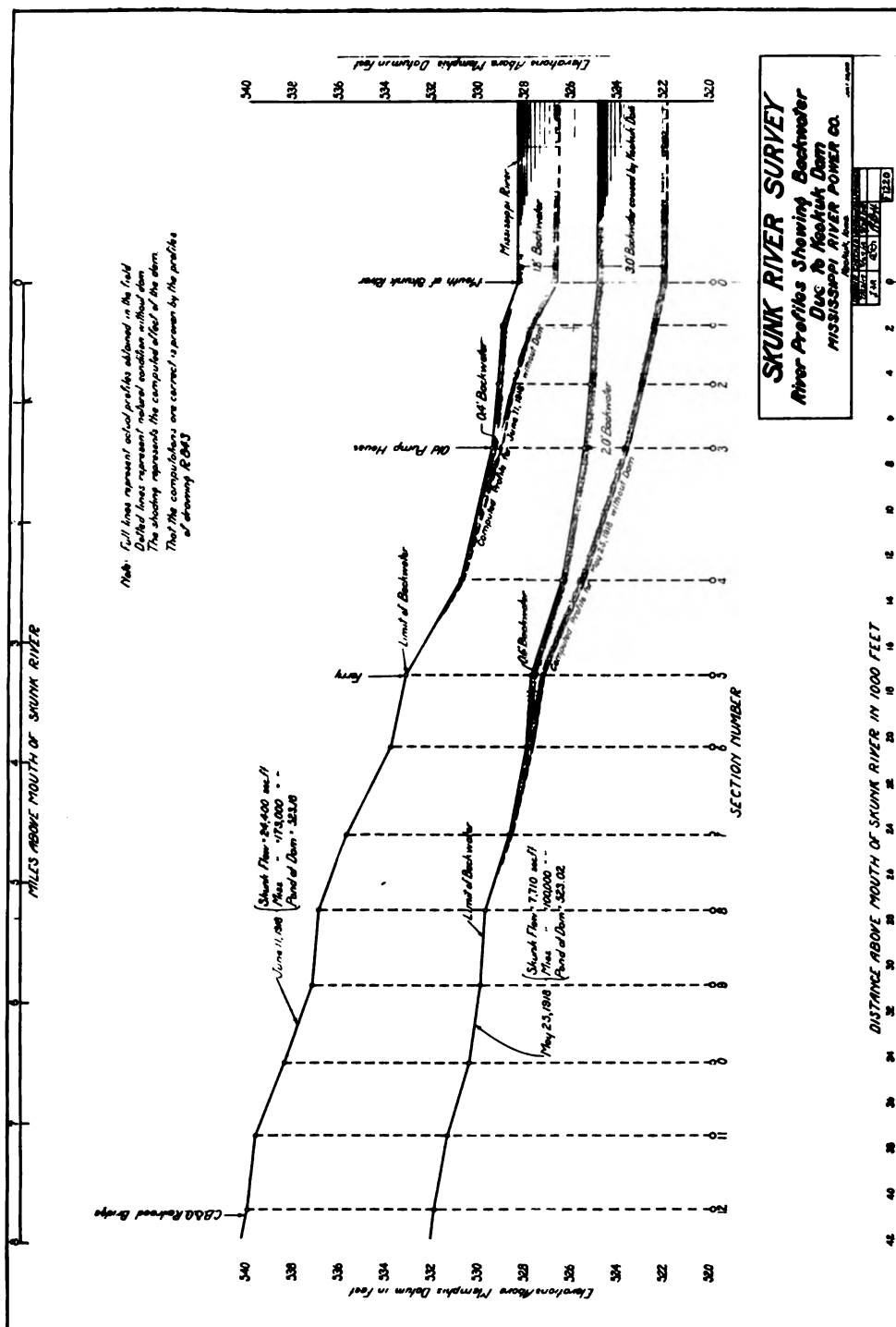
When the right stage occurred in the Skunk, a hurried trip was made to Augusta to obtain a flow measurement and a complete profile clear to the mouth. To have no question arise as to the accuracy of the flow rating curve at the Augusta gaging station, the current meter measurement of flow was made just before taking the profile. The flow measurements were made from the bridge with a Price current meter using piano wire for supporting the meter and 30 pounds of lead when necessary to cut down the drift of the meter. An average of about 30 measuring sections was taken with velocity obser-

uations at two-tenths and eight-tenths depth in each. Depths were measured in every section and corrected for drift where it was appreciable. Immediately after completing the flow measurement, water surface elevations were taken at each section in order downstream. The row boat used for transportation traveled downstream at practically the same rate as the current. This method of first taking the flow measurement and then working downstream on the profile, entirely eliminated any effect of change of stage due to time interval.

The accompanying photographs show typical conditions on the flood of June 11, 1918, when the river was very nearly at its crest. Some idea may be gained from them as to the character and extent of the overflow sections. At the time of these pictures, water was flowing in some places several feet deep over corn fields. This flood, however, was by no means the worst that has occurred, and damage that was done was to be expected.

Fortunately, in less than three months all the desired stages had occurred and, in addition, there occurred an unusual combination of stages in the two rivers which practically duplicated a computed profile and proved its accuracy. This will be described later, however. The remaining work of the investigation involved mostly computing, the details of which will not be given here. The method of computing the natural profiles for each of the actual profiles obtained has been outlined above. It should be stated that the higher the stages are in the rivers, the less the backwater from the dam, and that, as the stages increase to flood, the limit of backwater moves downstream to within less than 4 miles of the mouth. This fact was quite a revelation to the farmers who were positive that the backwater extended nearly to Augusta.

The computations had proved very enlightening and were seemingly correct, but they still lacked absolute proof until on June 14, 1918, a combination of stages in the Mississippi and Skunk Rivers occurred which settled beyond a doubt the accuracy of the computations. On this date, after the Skunk River had fallen to a bank full stage practically the same as it had been on May 30th, the Mississippi was at its highest stage of the year. At this stage of the Mississippi, the backwater at the mouth of the Skunk was only 1.9 feet. In other words, if there had been no dam the flood level at the Skunk River



mouth on June 14th would have been lower by one and nine tenths feet. This was almost exactly the Mississippi stage which had occurred on May 30th with the same stage in the Skunk as on June 14th. Hence a direct measure of the amount and extent of the backwater on June 14th was obtained which was free from theory and any uncertainties of shifting channel.

If the limit of backwater from this determination is compared with the computed limits, it will be found that there is absolutely no difference when effect of stage is considered. The obtaining of this profile was a source of great satisfaction. It should appeal particularly to the man who has no faith in theory and figures. It shows the value of theory when applied with care and judgment.

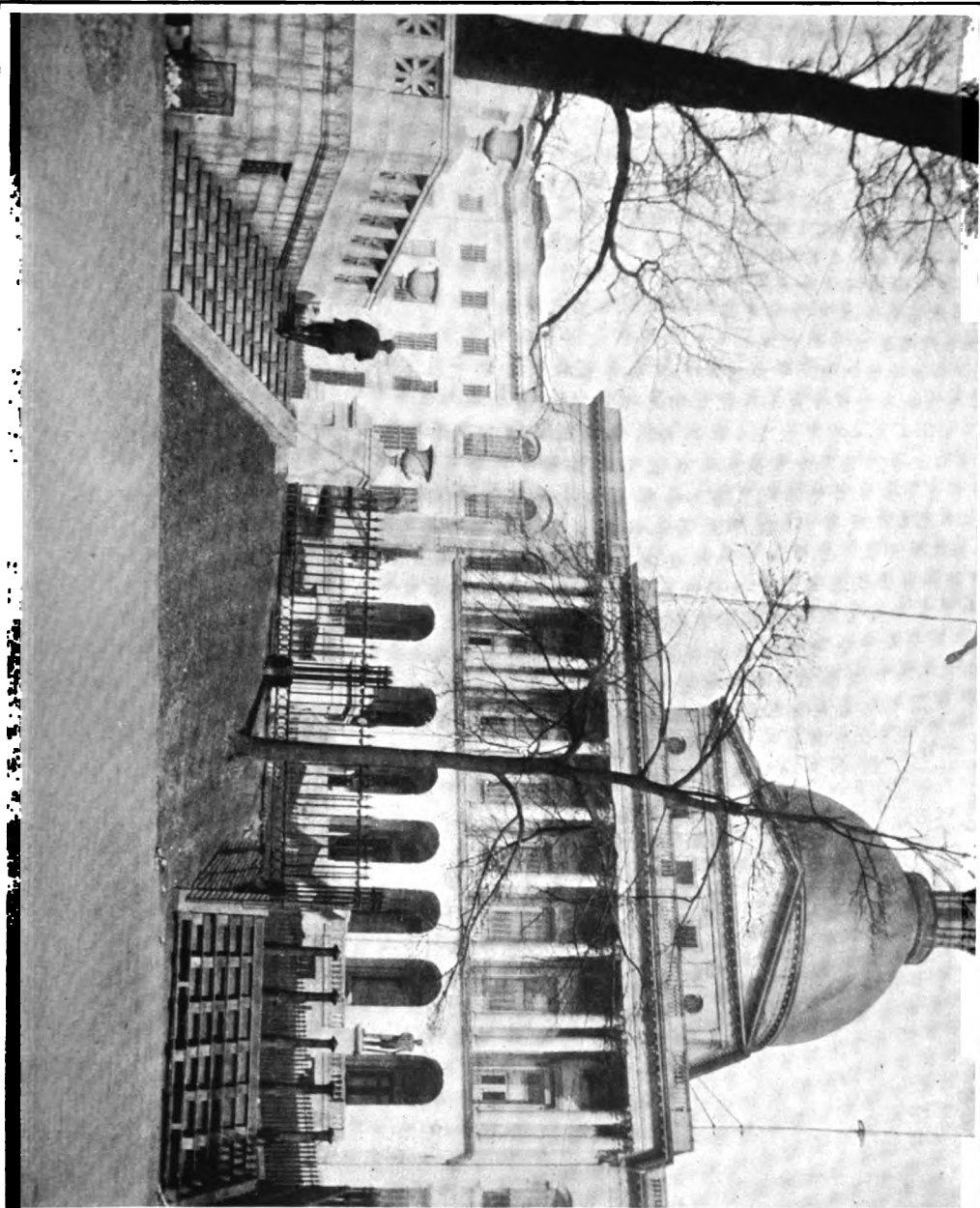
The following tabulation of data is given in case other engineers care to compare or to use the coefficients computed:

Section No.	MEDIUM STAGE Profile of May 25th Q = 7,710 second-ft.			BANK FULL Profile of May 30th Q = 14,500 second-ft.			FLOOD STAGE Profile of June 11th Q = 24,400 second-ft.		
	s	c	n	s	c	n	s	c	n
9				.000135	85	.029			
8				.000203	66	.035			
7				.000316	66	.036			
6	.000124	84.4	.027	.000180	79	.031	.000340	74	.033
5	.000188	67.9	.032	.000237	54	.044	.000382	55	.045
4	.000246	67.2	.034	.000426	62	.038	.000399	77	.030
3	.000124	75	.031	.000236	69	.034	.000168	91	.026
2	.000064	100	.023	.000168	95	.024	.000088	123	.018
1	.000076	88	.027	.000242	78	.030	.000194	78	.031

It will be noted that there appears to be a definite increase in the coefficient of roughness with an increase of flow up to a bank full stage. With further increase of stage, however, the coefficient remains about constant. This may be due to the fact that the flow in the overflow sections was estimated separately from the open channel flow, thus eliminating the excessive friction which would be erroneously indicated if the overflow were considered as a part of the main channel flow. The river channel is of sand and silt with banks of heavy loam. Trees and brush line the top of the banks, their amount and extent increasing from the railroad to the mouth until, at the mouth, the entire overflow section is wooded.

One point clearly brought out by the study was the excellent opportunity afforded for a study of backwater where two

streams, whose crests of flow do not come at the same time, meet. Such a situation allows of the obtaining of actual backwater values directly. Methods of computing backwater as well as backwater formulae can be very readily tested out in such a location.



THE EMBANKMENT IN FRONT OF THE STATE HOUSE BEFORE THE IMPROVEMENT

THE CONSTRUCTION OF THE LIBERTY MALL ON BOSTON COMMON

BY ARTHUR A. SHURTLEFF, Landscape Architect

The readers of the Journal will be interested in the accompanying illustrations* showing the progress of work at the Liberty Mall on Boston Common. The preliminary plans for this work and pictures showing its original condition appeared in the December, 1917, issue of the Journal.

One photograph indicates the condition of the embankment in front of the State House adjoining the Shaw Memorial before the improvements were carried out. The view also indicates the two narrow stairways of different sizes, different periods, different material, and also the embankment of varying slope. These stairways were inadequate to accommodate the vast crowds congregating near the Capitol. When the scheme for widening the steps was undertaken, it was considered by representatives of the Park and Recreation Department, The State House Commissioners, The Art Commission, The Boston Common Society, and others. Great care was taken to safeguard the integrity of the Shaw Memorial and to carry out the work in a way to preserve its character. The new steps correspond precisely in number, tread and rise to the original steps. Special pains were also taken to secure the same kind of stone and to reproduce the original texture.

The upper end of the Beacon Street Mall was regraded sufficiently to give level ground at the bottom of the first step. The large posts at the tops of the steps were cut with a rough texture from marble similar to that used in the central portion of the Shaw Memorial.

During the past summer an inscription has been cut on each flight of the new steps recording the dedication of the Liberty Mall. The inscription reads — "Liberty Mall Dedicated October 27, 1917 to Our Soldiers and Sailors in the Great War."

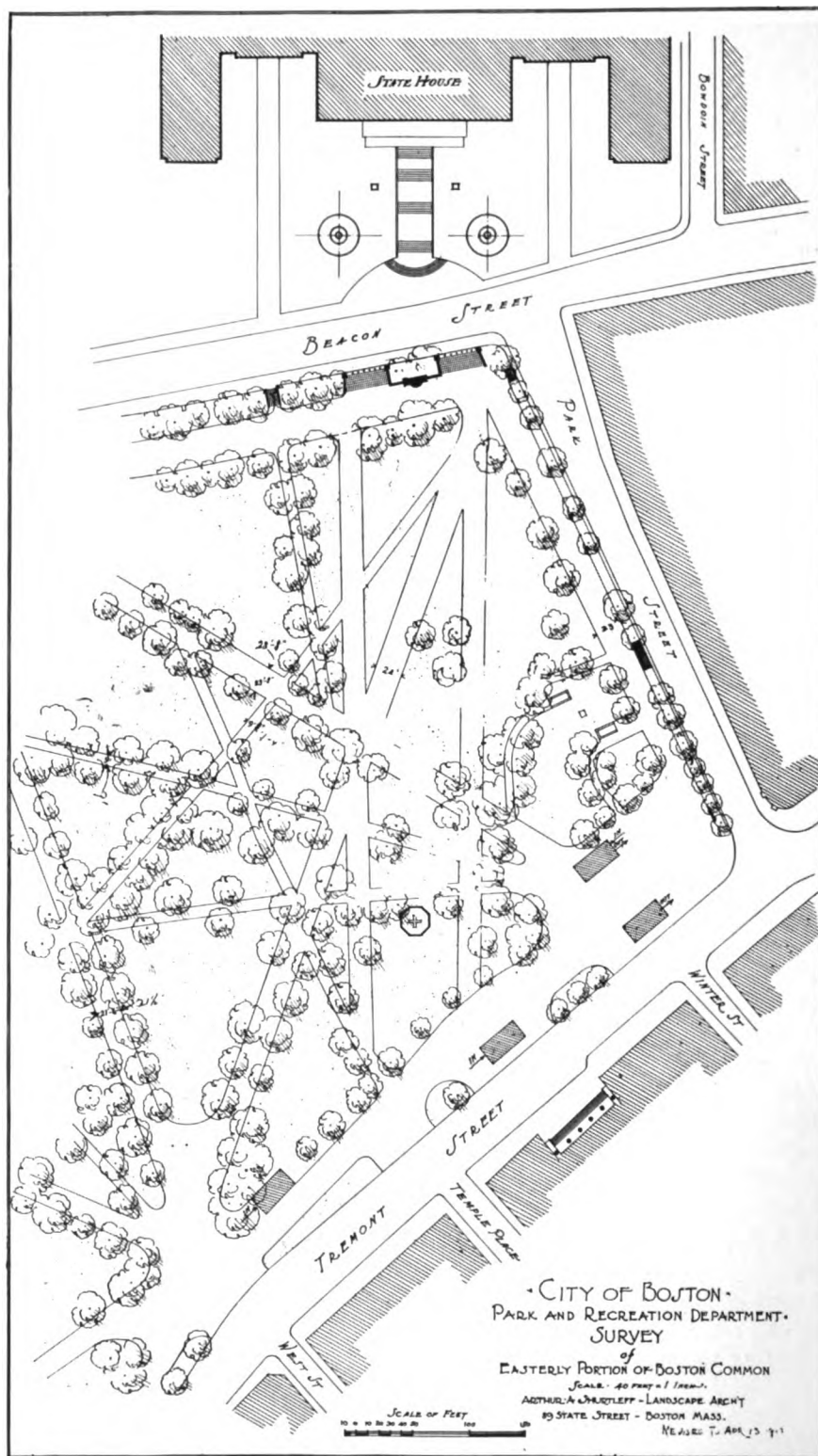
Although the new walks of the Mall are built of concrete, it seemed undesirable to use this material immediately in front of the Shaw Memorial. It was generally thought that the gravel surface was more pleasing. For this reason the Beacon Street Mall was merely regraded and, subsequently, resurfaced

*See the frontispiece of this issue of the Journal.

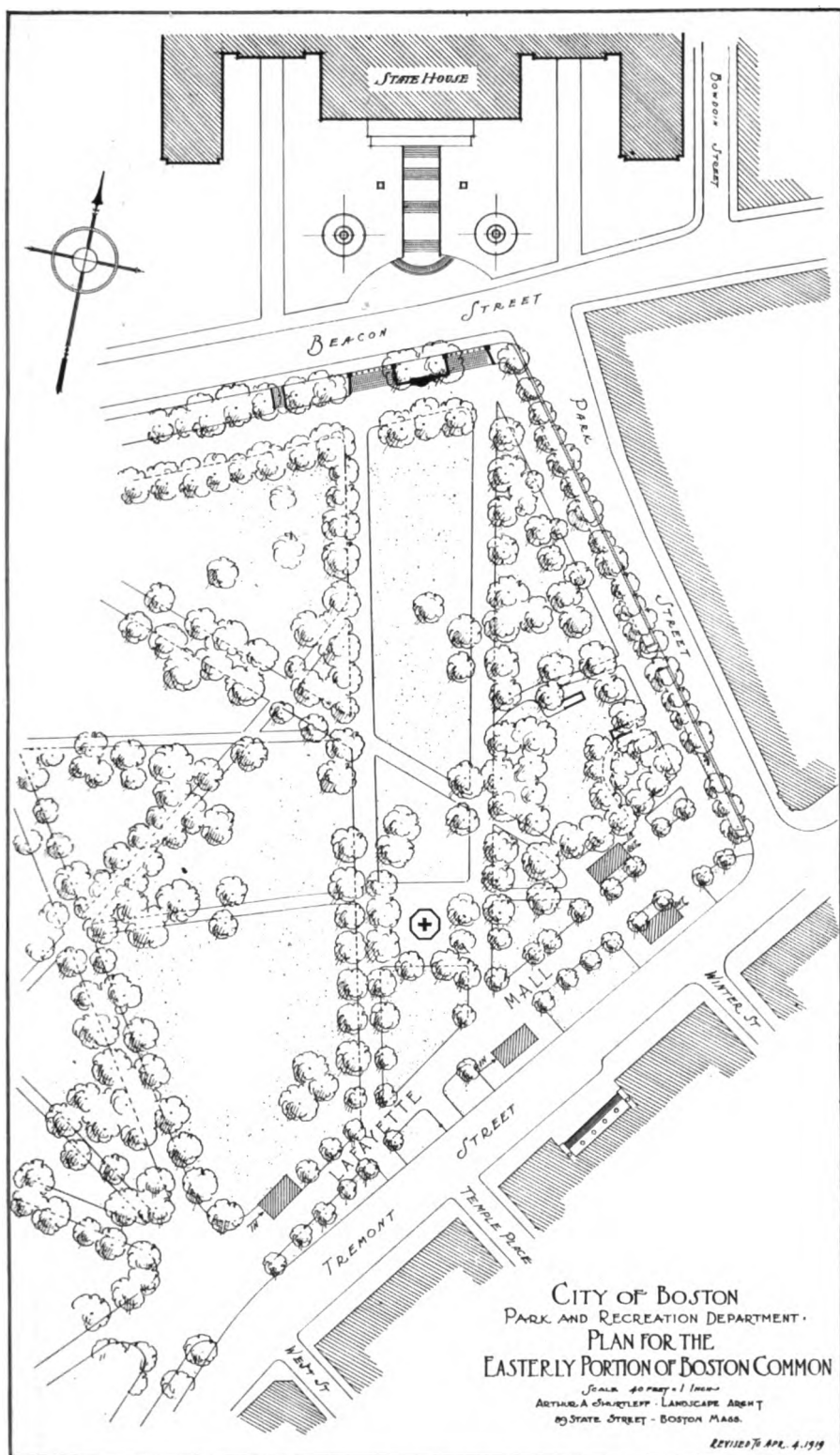
with the original top of gravel and screenings. The Park Street Mall, however, and both of the main walks have been constructed of concrete having a very rough texture simulating gravel. This surface also has the advantage that it gives a good foothold in slippery weather. Special pains were taken to avoid using ruled joints on the surface of these walks, but the foundations were jointed. As settlements take place, it is anticipated that cracks will occur over the under joints, but a mechanical ruling of the surface will not appear. It is expected that, in some instances, the cracks on the surface will chip, but it is believed that this chipping will not be extensive enough to detract from the general effect of a uniform, rough-textured surface.

Expansion joints were provided every 20 feet, but these were also masked as much as possible at the surface to avoid breaking up the continuity of the walks. Catch basins were provided to take surface water, but these basins were made as inconspicuous as possible.

The walks were built with little or no crown and curbings were provided on each side. These curbings were cast with the walk and do not rest on independent foundations. When cracks occur across the walk it is arranged that the extension of the crack will carry through the curbing. The curbings are about 4 inches high and 4 inches wide. Surface water is invited to run over these curbings upon the walk and seek the nearest catch basin. This is more or less of an innovation in walk construction, but has thus far been very successful. The cost of constructing and the upkeep of special gutters has thus been obviated. In times of very heavy rain the amount of water running on these walks is greater than could be desired, but these conditions are met only in very heavy downpours when few pedestrians are abroad. In the winter no difficulty has been found in keeping the walks free from snow and, during the past season, there was no trouble with ice. Horse scrapers and snow ploughs are used freely on the walks and have shown no effect thus far to tear the surface. In the past the main walks of the Common have been built of great width and very sharply crowned to throw water into wide and ugly gutters. The gutters were so deep and so sharply curved — in fact, their contour was so abrupt — that settees were forced out upon the grass, as they could not find a satisfactory standing place in the curve of the gutters. This system seemed so wasteful of space and cut



BOSTON COMMON FRONTING STATE HOUSE ACCORDING TO FIRST PLAN



BOSTON COMMON FRONTING STATE HOUSE ACCORDING TO PRESENT PLAN

down the grass area so much that an improvement was needed and it is believed that much more efficient walks provided in the Mall will accomplish the desired result. Settees of the modern single support type are placed immediately outside the walk, so that the feet of persons sitting rest in what would normally become the gutter. In this case, however, the surface in question is so flat and smooth that it is satisfactory for the purpose.

As the work progressed it seemed advisable to eliminate the two diagonal walks leading to the corner of Beacon Street. Experiments were made by roping off these walks to see if the public would take willingly to the short detours involved, and it was found that the angles between the old and new walks were so small that the crowds readily followed the new lines, owing to the greater width and better location of the stairways at the Shaw Memorial. It consequently became possible to remove a considerable area of walk and substitute greensward. This change made the Mall much more attractive in appearance and, at the same time, cut down the cost of construction and will reduce the expense of upkeep. The survey of the former conditions shows the dangerous traffic situation which existed at the corner of Beacon and Park Streets when pedestrians were invited to cross thoroughfares at most dangerous points. The new wider staircases made possible the elimination of the dangerous diagonal crossing at the head of Park Street, where a bad gradient also exists. The traffic officers have reported that the new arrangement has lightened their duties in this vicinity.

After the Brewer Fountain was moved from its old undesirable location near the public sanitariums to its new site on the axis of the Mall, the experiment was made of eliminating the guard fence around the Basin. Trouble occurred at once, as boys used the Basin for rafting and climbed upon the figures and even upon the upper Basin itself. A fence was consequently installed, using materials from some of the old fences discarded by the Park Department. This economy was made necessary by the money shortages of the War. Several large trees were moved from nearby locations to form a background at the southerly end of the Basin, but these trees have died. In general, it has been found that attempts to move trees of 8 to 10 inches in diameter from one part of the Common to another have been unsuccessful. At best — under city conditions — the trees

have a very precarious existence, owing to the dust and gas in the atmosphere, insect pests and soil difficulty. It is now thought that the atmospheric conditions alone are sufficiently hazardous to make the moving of trees on the Common impractical. It would doubtless be feasible, however, to move large trees to the Common if they are brought from a district in which there has been no smoke nuisance to reduce their vitality. The best results on the Liberty Mall thus far have been obtained by using well-grown nursery trees having a caliper of 4-4½ inches. In well prepared tree pits these trees have made a good start and are growing thriftily. The tree chosen for this purpose is the English Elm. Specimens of this kind, but of about twice the size, growing near the Mall, when moved, have either died within a few months or have made a poor growth. American Elms have not lasted well on the Common. All the old specimens are in a decrepid condition, but English Elms of a much greater age are still growing on the Common thriftily. Trees of this kind planted before the Revolution are now in a satisfactory condition and recover in an astonishing way from necessary pruning operations which are carried on from time to time. Tree planting at the lower end of the Mall is prohibited by the proximity of the roof of the Subway, which is very near the surface of the ground.

The improvements shown on the plan immediately adjoining Tremont Street involving tree planting and loam areas have not been carried out as yet, owing to the presence of temporary buildings erected to serve as shelters for soldiers and for welfare organizations which have sprung up during the War.

BUSINESS CONDITIONS IN STONE & WEBSTER LOCALITIES

The managers of the companies operated by Stone & Webster write to the Management Division of Stone & Webster about the first of each month with reference to business conditions in their respective localities during the preceding month. A digest of these letters is published each month in the Stone & Webster Journal.

Baton Rouge, La., August 12th:

Building permits for July, 1919, were valued at \$88,873, against \$24,734 last year.

Average number of employees at the Standard Oil Company in July, 1919, was 2,732, against 2,248 last year.

The number of building permits in July, 1919, was the largest ever recorded, as was also the valuation.

Builders are experiencing some difficulty in securing negro help, as the negroes are now working on a number of sugar plantations throughout the state, some being attracted to the Standard Oil Company.

There is some talk of the Standard Oil Company building houses in the vicinity of its plant, to be sold to employees on the easy payment plan.

The July receipts of Baton Rouge Electric Company are very satisfactory, power metered representing the largest the company has had in its history, amounting to an increase of 37% over last year. July is also the largest month the company has had in electric sales.

Railway receipts are increasing daily.

Beaumont and Port Arthur, Tex., August 12th:

Bank clearings at Beaumont for July, 1919, were \$5,602,929, against \$5,538,525 last year.

During July, 1919, 99 building permits in Beaumont were issued, valued at \$139,539, against 88 last year, valued at \$108,234.

During July, 1919, 22 building permits were issued in Port Arthur, valued at \$24,260, against 15 last year, valued at \$14,295.

It is believed that general business in this community will continue very good for several months at least. There is an unusual activity in the lumber industry and the prospects for a good rice crop at high prices are excellent. There is a heavy demand for hardware and oil well supplies.

Business in retail lines is good, but the public is complaining of high prices.

In July, 1919, was a record for rainfall in this section. The total fall amounted to 9 inches. This had a bad effect on some of the minor crops, but the rice men feel that on the whole their industry has not suffered appreciably.

The receipts of the Eastern Texas Electric Company for July, 1919, were the largest so far in the company's history.

Bellingham, Wash., August 18th:

Building permits at Bellingham for July, 1919, were valued at \$158,635, against \$8,350 last year.

Post office receipts at Bellingham for July, 1919, were \$7,777, against \$8,330 last year.

General business conditions remain good both in Bellingham and in the surrounding country. The farmers are getting good prices for their crops with a better than normal yield. This, together with large wages paid in the industries, has had a tendency to prolong the prosperity of the past year.

There is apparently a good market for lumber. Activity in the building lines seems to be about the same, and road improvements are being rushed in anticipation of the rainy season.

The weather has been exceptionally good for the crops in Skagit County. There is a very heavy yield of grain and all other crops seem to be doing better than during the average year.

The receipts of our city lines for July, 1919, show an increase of 51% over last year.

Passenger receipts on the interurban show an increase of 23% over last year, due to improved business conditions in Skagit.

Freight receipts on the interurban increased 24%. Light and power receipts of the Pacific Northwest Traction Company increased 43%, those of the Puget Sound Traction, Light & Power Company, 8%.

Gas receipts also increased.

El Paso, Texas, August 5th:

Bank clearings for July, 1919, were \$23,182,307, against \$19,994,890 last year.

During July, 1919, 101 building permits were issued, valued at \$236,170, against 74 last year, valued at \$45,224.

The railway receipts of the El Paso Electric Railway Company for July, 1919, show an increase of 37.6% over last year.

Indications are that the light and power receipts will continue to show gains during the coming months.

Everett, Wash., August 26th:

During July, 1919, 92 building permits were issued, valued at \$81,110, against 46 last year, valued at \$14,627.

Post office receipts for the quarter ending June 30, 1919, were \$29,879, against \$21,786 last year.

Prices for lumber and shingles are at the peak. Orders are plentiful but the supply of logs is very scarce, which delays greatly the filling of orders. This applies particularly to cedar logs, and unless there is some relief some of the mills will have to close.

Fall River, Mass., August 12th:

Bank clearings for July, 1919, were \$10,546,854, against \$10,023,140 last year.

During July, 1919, 64 building permits were issued, against 39 last year.

Sales of cotton cloth for the last two weeks have been small. The mills, however, have plenty of orders to keep them going for some time.

General business is also good, with the prospect of its continuing so for the present.

The receipts of the Fall River Gas Works Company for July, 1919, show an increase, with the prospect that they will be even larger during August.

Fort Madison, Iowa, August 13th:

Bank clearings for July, 1919, were \$2,340,224, against \$1,778,906 last year.

General business conditions continue to improve, the outlook for the future being extremely bright. Building operations in all parts of the city are very active and the housing situation remains as serious as ever. In spite of the high prices, new residences are constantly being started, and it was recently announced that a Kansas City firm had become interested in the erection of 62 new houses, shortly to be started.

The Perfection Tire & Rubber Company used 122,000 kilowatts during July, as compared with 43,640 last year, an increase of 180%. This company's average daily output is approximately 1,000 tires and 1,000 tubes, as compared with an output of less than 200 casings per day last year. The company has recently enlarged its equipment.

The receipts of Fort Madison Electric Company for July, 1919, show an increase of 49% over last year.

The sales of merchandise were unusually heavy.

Fort Worth, Texas, August 4th:

Bank clearings for July, 1919, were \$73,917,492, against \$52,268,968 last year.

During July, 1919, 180 building permits were issued, valued at \$2,047,995, against 60 last year, valued at \$198,180.

Stockyard receipts during July, 1919, were as follows:

	1919	1918
Cattle	110,757	142,898
Cows	38,769	36,450
Hogs	27,154	29,476
Sheep	15,504	32,994
Horses and Mules	1,227	2,638

The bank clearings and building permits given above afford a very clear idea of the enormous volume of business now being transacted in Fort Worth, as well as the necessarily prosperous condition of the surrounding territory.

Weather conditions were more favorable in July than in June, owing to the predominance of clear weather.

Our interurban business continues large, the receipts for July, 1919, showing a gain of 30% over last year.

The city lines show an increase of 5.8%.

Business conditions in Cleburne are gradually improving.

Galveston, Texas, August 8th:

Bank clearings for July, 1919, were \$35,874,800, against \$17,693,784 last year.

The volume of business for July, 1919, shows \$142,303,000, against \$85,767,000 last year.

Post office receipts for July, 1919, were \$15,940, against \$19,125 last year.

During July, 1919, 577 building permits were issued, valued at \$77,962, against 308 last year valued at \$16,194.

The demand for homes and homesteads is continually increasing.

During the cotton year officially ending on July 31, 1919, net receipts of the staple at Galveston were 1,933,092 bales, a gain of 311,206 over last year.

702 vessels entered the port of Galveston in foreign trade during the fiscal year ending June 30, 1919, against 516 last year.

The vessels leaving from this port in foreign trade during the fiscal year were 723, an increase of 183.

The business prospects for Galveston appear bright. New industries constantly spring up in the territory tributary to this port, promising large increases in the revenue for the district. At Galveston several oriental concerns, notably the Goshu Company and the Mitsui organization, have invested large sums in concentrated warehouses and are expecting to do a large import and export business with the Orient. Two direct lines to Japan have already been inaugurated.

The railway receipts of the Galveston Electric Company for July, 1919, show an increase of 24.9% over last year, and the lighting receipts an increase of 24.2%.

Haverhill, Mass., August 11th:

Savings bank deposits on July 31, 1919, were \$15,131,099, against \$13,932,887 last year.

During July, 1919, 36 building permits were issued, valued at \$132,200, against 4 last year, valued at \$1,700.

General business conditions remain about the same as a month ago.

Houghton, Mich., August 12th:

The situation in the local copper industry was characterized during July by a large increase in price of the metal. All of the large producers have taken steps to increase their output, the supply of labor being limited. No marked increase in output can be expected for some months to come.

While copper conditions have improved vastly, the improvement in general business is lagging behind. No great change for the better can be expected until the decrease in the population occasioned by the migration of labor can be recovered.

High commodity prices have also tended to restrict the volume of business.

Houston, Texas, August 9th:

Bank clearings for July, 1919, were \$76,783,347, against \$50,284,369 last year.

During July, 1919, 408 building permits were issued, valued at \$677,803, against 175 last year, valued at \$247,134.

Real estate transfers for July, 1919, were \$2,715,305, against \$1,027,150 last year.

General business conditions in Houston and adjacent territory continue healthy and in a very active state. While some lines do not show much increase over the previous month, all lines show heavy increases over July, 1918.

Bankers report that deposits continue to be increased.

The peak price of the year for cotton was reached during July, resulting in much of the remaining cotton in this section being moved. The report of the Houston Cotton Exchange for the year ending July 31, 1919, shows that net receipts, which means cotton bought, sold and handled in the warehouses and compresses, amounted to 1,066,979 bales, with a value of more than \$160,000,000. The net receipts for Houston were larger than any other city in the United States.

The real estate market is very lively and the unprecedented building wave which has characterized the past few months continues without any sign of abatement. The architects report that their offices are filled with plans for which contracts have not been let. The only hindrances to the building activity are the somewhat unsettled condition and scarcity of labor and the shortages in some lines of building material. Scarcity of rental property continues.

Wholesale merchants report that demand for all commodities continues very great. Retail merchants declare that their sales are extraordinarily large and that almost all classes of trade show increases over last month. The clothing merchants, in particular, report an unusual volume of business, the increases for July, 1919, over 1918 being in some cases as high as 80%. It should be stated that their business last year was greater than ever before.

The farmer is the only one who reports that his business is unfavorable. The crops in this locality are in poor shape. It is doubtful if the farmer will be able to produce even 50% of normal. The heavy rains which have created this condition have let up to some extent, which means a good deal to the farmer. Fortunately, the unfavorable crop conditions are confined to this section of the state. As bounteous crops are expected in other sections, it is believed that the local shortage will have no pronounced effect on general business.

Business in all lines has taken a spurt in August and all interests are anticipating as large a volume in August as in July, if not larger.

The plant of the Texas-Portland Cement Company, which has a capacity of 1,200 barrels per day is to be increased in the near future to a capacity of 2,400 barrels.

The Sinclair-Gulf Corporation has announced that it plans to spend \$1,000,000 in building a model industrial city, adjoining its refining plant.

The receipts of the Houston Electric Company for July, 1919, increased 5.9% over last year, and those of the Galveston-Houston Electric Railway Company 17.9%.

Keokuk, Iowa, August 4th:

General business conditions continue to show marked improvement over last year in every line, except in the matter of new buildings.

Since June 15th we have had practically no rain up to the last few days, during which we have had several showers. This hot, dry spell will,

it is thought, considerably retard the bumper corn and wheat crops, which are otherwise so promising.

During the first six months of 1919 the number of electric customers connected up by the Keokuk Electric Company, shows an increase of 7.6%, and the number of gas customers an increase of 6.1%.

The receipts of the company's city lines for the same period show an increase of 31.8%.

Key West, Fla., August 7th:

Customs receipts for July, 1919, were \$53,438, against \$44,243 last year.

During July, 1919, 6,768,185 cigars were manufactured, against 6,649,900 last year.

The general business outlook for the immediate future is very good. The cigar factories are using every available cigar maker, and some of the manufacturers claim that they are unable to secure enough operatives to take care of their orders.

Lowell, Mass., August 18th:

Bank clearings for July, 1919, were \$5,125,401, against \$5,553,826 last year.

During July, 1919, 97 building permits were issued, valued at \$240,315, against 55 last year, valued at \$34,210.

General business prosperity continues. There seems to be but little indication of unemployment.

Paducah, Ky., August 5th:

Bank clearings for July, 1919, were \$7,115,280, against \$5,720,327 last year.

The encouraging feature of the prevailing business conditions is the comparatively large amount of residence building going forward. There is also a noticeable improvement in the number of buildings in the business district.

The International Shoe Company has begun the manufacture of shoes.

On the whole, the general business outlook is very encouraging.

There is a noticeable activity in every line of business in Paducah. The whiskey manufacturers, who have a large quantity of whiskey in bond, are greatly concerned over the policy of the Government with regard to wartime prohibition.

The receipts of the Traction Company continue to show encouraging increases over last year.

The receipts of the light and power department the first six months of this year show an increase of 27.2% over 1918.

Pawtucket, R. I., August 5th:

The banks report a decrease of 2.4% in commercial accounts in July, 1919, as compared with 1918, and an increase of 14% in savings accounts.

General business conditions in July, 1919, were all that could be

expected, all lines of industry having more orders than can be properly handled, due to the lack of skilled labor and the reduction in hours of working.

Retail merchants report that the volume of business in July was greater than for many years.

The building trade is very active. Many mills are erecting or making additions to present plants. The principal mills erecting new buildings are the Rhode Island Textile Company, Lorraine Manufacturing Company, Sallembiec & Clay Company, McKenzie, McKay, Hemphill Manufacturing Company and John W. Little Company.

The J. & P. Coats' Company has submitted bids to its home office in Paisley, Scotland for the erection of a mill to cost \$1,000,000.

Many dwelling houses are being erected, but not on as great a scale as conditions require, owing to the scarcity and high price of lumber.

Pensacola, Fla., August 8th:

During July, 1919, 134 building permits were issued, valued at \$65,172, against 91 last year, valued at \$29,888.

Pensacola Shipbuilding Company launched its fourth steel ship on July 12, 1919.

The construction of a \$180,000 high-tension wooden compress, one of the most needed facilities for the development of Pensacola, is practically assured by the subscription locally of nearly the entire stock. The securing of this compress will mean the shipping of about 300,000 bales annually.

The United States Shipping Board has allocated 10 ships to this port for trade with Great Britain.

Several cargoes of lumber and naval stores were exported through this port during July. Business in this line is gradually increasing.

Savannah, Georgia, August 9th:

Bank clearings for July, 1919, were \$36,825,463, against \$24,637,900 last year.

During July, 1919, 102 building permits were issued, against 20 last year.

Cotton receipts for July, 1919, were 107,411 bales, against 34,777 last year.

Turpentine receipts for July, 1919, were 7,600 barrels, against 23,710 barrels last year.

Rosin receipts for July, 1919, were 23,710 barrels, against 2,764 last year.

The unusual number of building permits is the outcome of the local agitation over housing conditions of the city.

Excursion travel out of Savannah was heavy during July.

Both the railway and lighting receipts of the Savannah Electric Company for July, 1919, show an increase over last year.

Seattle, Wash., August 10th:

Bank clearings for July, 1919, were \$170,865,979, against \$166,582,111 last year.

Building permits for July, 1919, were valued at \$1,574,235, against \$912,985 last year.

Real estate transfers for July, 1919, were \$2,525,529, against \$1,496,489 last year.

Despite the loss of two full months in the great strike that began in January and ended in March, the deliveries of the Seattle Shipbuilding industry for the first seven months of 1919 number 53 vessels, aggregating 350,000 dead weight tons. In tonnage the record is equal to 62% of the entire 1918 output. The deliveries consist of 29 steel steamships, 8 wooden steamships, 8 wooden motor ships, 3 auxiliary powered schooners, 1 wooden sailing schooner and 9 wooden hulls; 42 of the ships were for the Shipping Board and 11 for private interests.

During the seven months just passed the bank clearings for Seattle show a gain of \$100,722,583 over 1918; real estate transfers a gain of \$3,069,869, and building permits a gain of \$5,465,701.

The bank clearings for the year have passed the billion dollar mark, with building permits up to \$11,691,711, or more than the combined totals for the first seven months of 1918 and 1917. Real estate transfers are higher this year than in any period during the past ten years, with a total of \$12,025,758.

Sydney, Nova Scotia, August 20th:

During July, 1919, 41 building permits were issued, valued at \$58,861, against 38 last year, valued at \$31,494.

Customs receipts for July, 1919, were \$30,073, against \$92,223 last year.

The output of the Dominion Coal Company for July, 1919, was 249,396 tons, against 282,839 last year.

Shipments were 226,389 tons, against 248,417 last year.

The labor situation is quite serious. Some departments of the Dominion Iron & Steel Company are partially closed down, it being stated that only about 30 out of 120 are being operated. The building of the plate mill affords work for a large number of men, who would ordinarily be laid off on account of the finishing of rail contracts and temporary lack of orders.

The furnaces of the Nova Scotia Steel and Coal Company are still being repaired and the number of men who are now employed in this work helps to relieve the situation somewhat.

It is stated that the Nova Scotia Steel and Coal Company is opening a colliery at Point Aconi. Machinery is now being installed to operate this colliery.

Tampa, Fla., August 11th:

Bank clearings for July, 1919, were \$7,299,484, against \$5,502,523 last year.

Building permits for July, 1919, were valued at \$51,350, against \$34,027 last year.

Post office receipts for July, 1919, were \$31,756, against \$24,892 last year.

Customs receipts for July, 1919, were \$162,096, against \$147,069 last year.

Internal revenue receipts for July, 1919, were \$328,347, against \$203,784 last year.

Cigar manufactures for July, 1919, were 40,554,000, against 38,204,000 last year.

The rainy weather prevailing apparently caused a reduction in shopping, and the curtailment in merchandise sales and other transactions is reflected in the bank clearings, which, while indicating a substantial increase over July, 1919, show considerably lower daily results when compared with the average daily clearings for the previous 6 months of this year. The peak was reached in March, when the average daily clearings were \$91,000. The figure for July is \$69,000.

Woonsocket, R. I., August 7th:

During July, 1919, 36 building permits were issued, valued at \$93,680, against 6 last year, valued at \$2,160.

General business conditions suffered slightly during the recent car strike.

News from the Companies

Boston Office

Mr. David Daly has relinquished the management of Houston Electric Company and Galveston-Houston Electric Railway Company, having been appointed district manager of the Middle West. Mr. Daly was at the Boston office for a short time recently.

Mr. C. A. Sears has been appointed manager of Mississippi River Power Company, having formerly been general superintendent.

Mr. Harry L. Harding, assistant treasurer of Houston Electric Company and Galveston-Houston Electric Railway Company, recently visited the Boston office.

Mr. Robert E. L. Morse, of the firm of Thompson, Knight, Baker & Harris, Dallas attorneys, was a recent visitor.

Mr. Warren Haskell, formerly of Dallas and later of Hog Island, called at the Boston office recently.

Mr. A. F. Townsend, manager of Eastern Texas Electric Company, recently made the Boston office a brief call.

Announcement was made on September 8, 1919 of the marriage of Mr. Mayland H. Morse of the corporation department to Miss Helen Hill Webb, daughter of Mrs. Simon Handley Webb of Rockland, Maine.

Stone & Webster have been instructed to resume work on the Delaware Station of the Philadelphia Electric Co.

Stone & Webster have been engaged by the United States Rubber Company to construct a plant at Detroit.

Mr. I. Maxwell Stover, University of Maine, 1914, has entered the statistical department.

James S. Sullivan of the statistical department has entered the service of the Haverhill Gas Light Company.

Mr. Frank K. Simmons of the statistical department was married August 16th, and has entered the service of The Pawtucket Gas Company.

Miss Gladys P. Gorman has left the statistical department.

Mr. D. R. Cooper of the engineering department has been transferred from the drafting department to the Hydraulic Division.

Mr. Lawrence E. Eustis of the treasurer's department is on his vacation.

Mr. D. M. Wood has returned to his position in the Hydraulic Division, engineering department, after an absence of two years, which was spent with the Emergency Fleet Corporation.

Mr. H. F. Anthony, formerly a member of the Hydraulic Division, engineering department, has been transferred to the construction department, and will be the superintendent of construction for the U. S. Rubber Co. at Detroit, Mich.

Mr. E. F. Rockwood of the engineering department, who has been in charge of the Structural Division work on the New York Railway Appraisal in New York City, was recalled to this city by the Governor to help police the city.

Mr. J. H. Manning has returned to the Boston office after two years' absence, and has been appointed assistant engineering manager. The two years away from Boston were spent at Hog Island, and more recently at the New York office in connection with the report on the Interborough Rapid Transit System and the New York Railways Company.

Mr. E. G. Allen of the engineering department has been appointed advisory engineer, reporting directly to the executives.

Mr. F. S. Clark of the engineering department has been appointed mechanical engineer in charge of the Mechanical Division.

Mr. H. L. Lowe of the engineering department has returned to the Boston office, after two years at Hog Island, and will be connected with the Mechanical Division.

Howard F. Neill, who recently returned from service to the treasurer's office, has been transferred to the auditing department.

B. H. Campbell, who has just returned from overseas duty, has been transferred from the treasurer's office to Savannah Electric Company.

J. T. G. Nichols has returned from his vacation.

Mr. Ralph H. Williams has been appointed secretary to Mr. Charles F. W. Wetterer.

Baton Rouge, La.

Mr. H. C. Foss was in Baton Rouge several days early in August.

Mr. R. A. Delaroderie, superintendent of the electric department, has returned from a trip to Florida, during which he visited in Tampa and Pensacola.

Mr. C. J. Latil, chief clerk, spent his vacation on the Gulf Coast.

Mrs. A. H. Vought, manager's secretary, and Mrs. Anna Hill, of the electric distribution department, have returned from their vacations, which they spent in New Orleans and nearby Gulf resorts.

Mr. C. E. Bell, superintendent of the gas department, announces the birth of a daughter.

The Standard Oil Company announced a 10% bonus for each employee of the local refinery beginning August 27th, and remaining in effect until the cost of living decreases to the level of December, 1918. The management also announced that plans are under consideration whereby the Standard Oil Company will assist their employees in building and owning homes.

A \$100,000 bond issue was favorably voted upon by the city voters on August 26th, for the purpose of purchasing a Victory Park site and erecting a memorial to the soldiers who took part in the World War.

Several hundred Masons with their families attended the installation of officers of the newly formed Grotto on August 27th.

Beaumont and Port Arthur, Texas

The Lone Star Shipbuilding Company of Beaumont has received instructions from the Emergency Fleet Corporation to complete hulls of two vessels on which work was suspended three months ago.

During the month of August the Beaumont Chamber of Commerce put on a drive for new members and succeeded in getting ninety new members.

Mayor E. J. Dittenbacher of Beaumont has written Hon. Joseph C. Tumulty, secretary to the President, making an urgent request for President Wilson to include Beaumont in the itinerary of his contemplated trip to Texas.

Mr. and Mrs. A. F. Townsend and little daughter, Pauline, who have been spending their vacation at Auburn, Maine, and other Eastern cities, arrived home early in September.

Mr. S. T. Pike, purchasing agent and assistant to the manager, visited Houston and Galveston August 21st to 24th, looking over the properties in these two cities.

Mr. and Mrs. R. T. Wright spent a pleasant vacation in Chicago and Minneapolis.

Mr. G. W. Swift, chief clerk, Port Arthur, has returned from a vacation spent at Fort Worth and other Texas points. Mrs. Swift will remain away until early fall.

Bellingham, Wash.

Mr. G. E. Quinan, electrical engineer, Mr. F. P. Dexter, general accountant, Mr. H. J. Gille, sales manager, Mr. W. J. Wilmot, assistant treasurer from Tacoma, and Mr. A. N. Chitty, superintendent of light and power of Everett, were visitors during the month.

Miss Diana Truchon, bookkeeper in charge of the gas books, was married on August 16th to Mr. Lawrence Teeple.

Bellingham had one of its old-fashioned Fourth of July celebrations this year, with a very large attendance from the surrounding counties. Among the various floats in the parade was one originated and constructed by the electric and sales departments, boosting the road to Mt. Baker. On either side was a picture of Mt. Baker showing a road leading from Bellingham to Glacier around the mountain and through Deming and back to Bellingham. Surmounting the profusion of evergreen, bunting and flags was a huge snowball with a placard reading, "Snow, two hours from Bellingham."

The success of the float was largely due to Messrs. Lindley, Muffley and Lasher, whose efforts were rewarded by capturing second prize.

Rex Beach's famous Alaskan story, "The Silver Horde," is to be filmed by the Goldwyn Pictures Corporation and will probably be released in December. Most of the pictures will be taken on Lummi Island, the salmon cannery and fishing traps of the Carlisle Packing Company being used for the greater part of the exterior, while the interior views will be taken at the Pacific American Fisheries salmon cannery, which is the largest cannery in the world.

Very elaborate plans are being made for the production of this picture, which will give an excellent idea of the magnitude of the salmon canning industry.

The Bellingham and Northern Railway has been transferred to the Chicago, Milwaukee and St. Paul Railway system. This is the logging road from Bellingham to Glacier and has the relation of a feeder to the larger system.

El Paso, Texas

The regular monthly meeting of the El Paso Electric Railway Club

was held in the club rooms Monday the 24th, at 8.00 P.M. It was our intention at this meeting to take up several important business matters, but owing to the very small attendance this was postponed until the next meeting. After a short talk by the president, we adjourned to the tennis court, where dancing was in order. The court was attractively lighted by a large spotlight. Music was furnished by a victrola, and punch was served. A larger attendance would have made this meeting an entire success.

Mr. H. S. Potter has returned from Plainfield, N. J., accompanied by Mrs. Potter, where they were in attendance with Mrs. Potter's mother, who is ill.

The dove season is now open, and many would-be crack shots are taking advantage of the sport to be had. Mr. Alexander, lighting superintendent, and Mr. Dixon, claim agent, have bagged quite a few, it is said.

Mr. Frank Loftus, company attorney, has just returned from a ten days' automobile trip through Colorado, including the Grand Canyon. He reports an excellent trip and many interesting sights.

The Rio Grande Valley Bank & Trust Company has purchased the southeast corner at Texas and Stanton Streets for \$70,000 and during October will tear down the present building. It will construct a modern office building, the first floor of which it will occupy upon completion. Effective November 1st this bank and the City National Bank will be consolidated, retaining the name of the City National Bank. The new institution will be capitalized at \$500,000, with total resources of about \$8,000,000.

The Juarez Banking and Investment Company, a newly organized bank, will have \$100,000 capital, and do a general banking and real estate business in Juarez. The bank will open about October 1st. Mr. R. S. Garcia, agent of the El Paso & Juarez Traction Company in Mexico, is president of the new bank.

The Municipal Store, opened by the city for the distribution of the government surplus supplies, did a rushing business, and has been forced to close, as its available stock has been disposed of. The government will open a store the latter part of September, it is said.

Fall River, Mass.

The sixth annual outing of the employees of the company was held on July 28th at Seaconnet Point, Rhode Island. The steamer "Sagamore" left City Wharf at 2.30, stopping at the Charles Street works to complete the party. Two hundred and sixty employees and guests attended. The trip down was through the passage between the island of Rhode Island and the mainland, where the scenery is as fine as any in New England. At Seaconnet bathing and other amusements were enjoyed. Then came a genuine old-time Rhode Island clam bake — clams, lobsters and all the "fixin's." We left the Point at seven o'clock, the return trip being made around the southern end of the island and through Newport Harbor. While the sea outside was quite calm, there were some few who would have had it calmer, for the well-being of the "bake." These, by the way, had the most heartfelt sympathy of the better sailors. The weather was perfect throughout the trip, and the lights on the battleships and other

craft in the harbor showed up especially well. The smooth running of the arrangements was due to the efficient direction of Mr. George Gilbert, superintendent of distribution. The steamer reached City Wharf at 11.30 P.M., and everyone who went voted the day the "best yet."

Fort Madison, Iowa

Miss Daisy E. Nelson, cashier, spent her vacation during the last two weeks in August in Colorado Springs.

H. A. Fennell, internal revenue inspector, recently made an audit of the reports of this company for the past five years.

The Methodist Episcopal people have purchased the Beck property on the northeast corner of Central Park. They will erect a new building during the coming year.

The Brown Paper Company, which has been shut down for the past four months, will shortly resume operations. The old paper mill has been entirely remodeled and put in first-class condition.

Fort Worth, Texas

Mr. Luke C. Bradley, district manager, paid Fort Worth a two days' visit during the latter part of the month. Mr. Bradley had just returned from his vacation.

Mr. G. H. Clifford, accompanied by Mrs. Clifford, spent several days in El Paso during the middle of August.

Mr. H. T. Bostick, for approximately fourteen years in the passenger department of this company, tendered his resignation as general passenger agent, effective September 1, 1919. Mr. Bostick intends to enter the real estate business with his brother, John Bostick, Jr.

Mr. R. L. Miller has been appointed general passenger agent to succeed Mr. H. T. Bostick, resigned. For nine years Mr. Miller was connected with the claim and transportation department of this company. He was transferred to the claim department at Galveston approximately two years ago, returning only recently from Galveston to Fort Worth.

Mr. Wm. Holden, superintendent of transportation, and Mr. Mason, master mechanic, both of the San Antonio Traction Company, spent several days looking over the Fort Worth properties.

Mr. C. P. Cass, president of the Safety Car Devices Company, Mr. Carl Beck, special representative of the Westinghouse Traction Brake Company, Mr. Raymond Boisselle, operating engineer of the Westinghouse Traction Brake Company, Mr. Aikman, designer for the same company, and Mr. Harris, motion picture operator of the Universal Film Company, spent several days in Fort Worth, at which time pictures showing the operation of Safety Cars were made. These pictures are to be shown at the Railway Convention this year. The matter of compressors for Safety Cars was also taken up in detail during the visit of these men.

Mr. O. H. Ryan, motorman, recently received the Croix de Guerre with gilt star for meritorious action in France. Prior to Mr. Ryan's departure from overseas he was awarded a Distinguished Service Cross. Mr. Ryan's rank was that of corporal with the Ninth Infantry.

Mr. H. V. Scanlan, a member of the accounting department, returned to his home in Boston recently, where he will spend his vacation.

Mr. W. T. Sherman of the Houston Electric Company spent several days installing automatic dampers at our Handley power station.

If advertisements and news items can be relied upon, Fort Worth and Dallas will be the recipients of an auto speedway rivaling even that of Indianapolis. Work has already been commenced on this speedway, and its promoters state the very highest class racers obtainable will be brought to the speedway, which is located on our interurban line midway between Fort Worth and Dallas.

A new automobile factory is now in the course of construction near Grand Prairie on the Fort Worth-Dallas interurban. This company, known as the Little Motor Kar Company, is capitalized at \$1,000,000, and it is stated that it will employ 3,000 workmen.

Owing to repairs which could not be done locally, we were compelled to ship our 5,000-Kw. turbine spindle to Pittsburgh. On account of the very high load conditions it was advisable to have the necessary work done as quickly as possible, and therefore the shipment, which weighed approximately 21,000 pounds, was made by express. It was just 25 days from the time the spindle left Fort Worth until it was again back in operation.

It may be of interest to know that Fort Worth is now having constructed what is to be the largest building in Texas, which is to be a 20-story steel structure known as the Waggoner Building. It will be occupied on the first floor by the National Bank of Commerce, the remaining floors being taken up by modern offices. Mr. W. T. Waggoner, capitalist, is constructing this building.

Fort Worth's new hotel is now in the course of construction. This building will occupy the site of the old Worth Hotel. The old hotel has been completely removed and excavation for foundation is now under way. The building will be 16 stories high and will be one of the most modern in the South.

Galveston, Texas

Miss Anna S. McKee, stenographer for the past year and a half, has resigned her position to accompany her family to Brunswick, Ga., where they will make their future home.

Mr. Jas. F. McLaughlin, secretary to Mr. Bradley, was a week-end visitor in Galveston.

Mr. and Mrs. E. P. Williams of Baton Rouge, La., were visitors at Galveston.

Mr. P. E. McChesney, commercial agent for the Eastern Texas Electric Company, spent a few days in Galveston.

Mr. and Mrs. Walter N. Monroe and children, of Paris, Texas, spent their vacation in Galveston. Mr. Monroe is employed by the Texas Power and Light Company.

Mrs. R. O. Himel and sons, Eldridge, Robert Jr., James and Billy, returned from Beaumont after a three weeks' visit to Mrs. Himel's mother, Mrs. C. P. Hacker.

The following employees of the accounting department enjoyed a two weeks' vacation during July: Jesse J. Merriman, Jr., Sidney McLin and Theo. A. Shields.

The UB-88, a former German submarine, which has as its record

the sinking of twelve steamers and the torpedoing of four others, arrived at Galveston on July 23rd and remained in harbor two days. The submarine was open to the public and thousands took advantage of the opportunity to view the vessel.

The Fourth of July celebration at Menard Park and at the beach-front was the means of bringing out practically the entire population of Galveston, as well as several thousand visitors from various cities and towns throughout the state. The main events were an airplane exhibition of daredevil stunts staged over the beach front, a celebration at Menard Park in honor of the returned fighting men of the city, and an exhibition of fireworks on the fishing pier at Twenty-first Street.

Mr. R. L. Miller, formerly assistant claim agent of this company and secretary-treasurer of the Galveston Electric Company Employees' Benefit Association, severed his connections with the above concerns on August 15, 1919, to return to his old home at Fort Worth, Texas.

Prior to his departure, he was presented with a beautiful Masonic emblem ring by his many friends here.

Mrs. W. E. Wood and little daughter, Mary Louise, are summering in the mountains of North Carolina, where they expect to be joined shortly by Mr. Wood.

Mrs. E. P. Turner, wife of our chief clerk, has returned from a two months' visit with friends and relatives at Paducah, Ky., her old home.

Miss Josephine Kampe entered our accounting department on August 16th as stenographer, succeeding Miss Anna S. McKee.

Messrs. W. E. Wood, M. B. Osborne and R. O. Himel spent several days during the month hunting and fishing on Smothers Lake.

Mr. James E. Murray, utility clerk in the accounting department, enthusiastically accepted the duties of secretary-treasurer of the Galveston Electric Company Employees' Benefit Association on August 15th. He now boasts of a membership of 210 out of a total of 218 eligible employees.

The following employees of the accounting department enjoyed a two weeks' vacation during August: Misses Grace M. Moon, Julia Theobald, Messrs. Wm. Seivert and Ferl E. Moon.

Houston, Texas

Mr. David Daly left on August 16th by the way of the Mallory Line to spend his vacation with his parents at Brighton, Mass. Mr. Daly will join Mrs. Daly and the children, who preceded him by several weeks. Mr. Daly's trip includes a visit to the Boston office.

Luke C. Bradley, district manager, has returned from a Boston visit, and his family has returned from a visit in the mountains of Georgia and North Carolina.

Mr. H. L. Harding has just returned from a vacation in Gorham, Me., where he has been visiting his old home. Mrs. Harding, who accompanied him, remained in the East several weeks before returning to Houston.

J. W. Landrigan, chief inspector of the transportation department of the Houston Electric Company, and family, spent a few weeks' vacation visiting Mr. Landrigan's parents at Everett, Mass. While in the East, he visited a number of the railway companies in that section.

Mr. Frank G. Gardner of the division of engineering and construction, has just returned to his desk after ten days' illness.

Mr. S. T. Pike of the Eastern Texas Electric Company visited Houston during the month. Mr. Pike spent most of his time visiting the power houses and car barns of both companies.

Mr. W. E. Wood, manager of the Galveston Electric Company, spent a few days in Houston this month.

W. A. Robertson, manager's clerk, spent a two weeks' vacation with his parents in Gallatin, Tennessee.

Mr. A. P. Deal has received his honorable discharge from the army and has returned to his old position as conductor.

Mr. J. L. Jennings, who was recently discharged from the Navy, has returned to accept his old position as motorman.

Mr. W. H. Giesecke has been discharged from the Navy and returned to his position as oiler at our LaBranch power house.

The U. S. S. "Comanche" of the Coast Guard, commanded by Captain Brockway, paid Houston a visit last week in the interest of the harbor development. It is the intention of the commander to visit Houston by the way of the Channel once a month.

The Southern Steamship Company's steamer, "Chamberino," is now at the Municipal Docks discharging a full cargo. This is the first trip of the "Chamberino" to Houston.

Keokuk, Iowa

Owing to the impossibility of securing a suitable boat, the annual excursion of the High Tension Club will be omitted this year. The steamer "Majestic," which the Club had hoped to get for a Saturday afternoon and evening excursion on September 6th, is now tied up at Kansas City, unable to get out on account of the exceptionally low water in the Missouri River. The Illinois River steamer "Julia Belle Swain," which was originally chartered for this year's excursion, was taken off the Mississippi early in the excursion season. Efforts made to secure a satisfactory boat since then have not met with success.

During the month a challenge tennis tournament was played against Burlington at Burlington. Six of the Power Company men played in this tournament and won the contest by 11 to 6. Two weeks later the Burlington players came to Keokuk and they were again beaten by a score of 6 to 3. The Burlington team is considered very strong.

The club is planning, during the month of September, to take a trip to Quincy to play them on the same basis as Burlington. This will be a particularly interesting match, in view of the fact that Quincy has at present the championship of the State of Illinois, both in singles and doubles.

The Gas Tank Recharging Company have erected a new steel building, additional room being required for the operation of their plant.

A considerable amount of cement sidewalks have been ordered to be put in by the City Council.

Mississippi River Power Company

Mr. C. A. Sears has been made manager of the Mississippi River Power Company, effective September first.

Mr. R. B. Howland, who early in the year returned to the Mississippi River Power Company as superintendent of operation, resigned his position on August 27th to take up work with another concern. The vacancy caused by Mr. Howland's leaving has caused the following changes in the operating department of this company:

Mr. L. E. Dickinson is made general superintendent; Mr. F. J. Venning is made superintendent of operation; J. J. Steuerwald, superintendent of distribution and construction; A. J. Sears, electrical superintendent; and P. M. Chamberlain, superintendent of substations.

Mr. J. L. S. Scadding, after a very pleasant vacation at Toronto, Canada, returned to Keokuk the first of the month to resume his duties.

The employees of the Power Company were given the opportunity of inoculation as a prevention against typhoid, three treatments constituting the entire operation.

About the first of August a round robin tournament was arranged by the Mississippi River Power Company Tennis Association, in which every player played every other. In the play-off the following positions were attained and buttons awarded according to each man's standing:

- | | |
|------------------|------------------|
| 1. J. L. Brady | 6. E. Ebersole |
| 2. R. B. Howland | 7. P. F. Gregg |
| 3. F. O. Jorstad | 8. C. H. Harris |
| 4. J. T. Wycoff | 9. J. H. Bissell |
| 5. R. H. Bolster | 10. A. Davis |

Every two weeks the play is resumed and each man is entitled to challenge the man above him for his button. This insures a continued interest in the game.

Now that Mr. Howland has gone, the club has lost one of its best tennis players and most energetic workers.

Keokuk Electric Company

On August 20th, Mr. Earl F. Doyle, clerk in our accounting department, was transferred to the accounting department of the Mississippi River Power Company.

Mr. J. P. Ingle, manager, spent from August 14th to 16th at Clear Lake, Iowa, attending a joint meeting of the Iowa Electric Railway Association and the Iowa Section of the National Electric Light Association.

Key West, Fla.

Mrs. Rosalie Maloney, cashier, and her mother are spending their vacation in the mountains of North Carolina.

Mr. William D. Hearne, electrical engineer, has been transferred to the Lake Ariguanabo Co. at San Antonio de los Banos, Cuba, as assistant manager.

Mr. Arthur L. Manning, of Boston, Mass., has been transferred to the power plant.

Mr. S. C. Jacoby, engineer at the power plant, has been transferred to the Pawtucket No. 1 Power Station of the Blackstone Valley Gas & Electric Company.

The city of Key West has made a proposition to the E. H. Gato

Cigar Co. that if they build a modern cigar factory costing \$80,000 at the corner of Simonton and United Streets, the city will purchase their property at Division Street and North Beach for park purposes.

The A. Santaella Cigar Company of Tampa have purchased the Martinez-Havana property on the County Road and will employ about 100 cigar makers.

The bridge connecting Key West with Stock Island has been completed and the road-making over the entire length of the Island is progressing rapidly.

Lowell, Mass.

Capt. P. J. Wilson, recently returned from France, has been discharged from service and has again taken up his former duties as power sales engineer of this corporation.

Mr. E. C. Wells, for many years assistant chief engineer at our plant, recently resigned his position to take up work as chief engineer at the Stirling Mills, Lowell, Mass.

Mr. James J. Sheehan, who acted as merchandise stock clerk in the commercial department, has been transferred to the accounting division as collector.

Mr. William Ryan, formerly collector in accounting department, has left the employ of this corporation.

Mr. Walter McInerney, who has been in the meter department for some time, has been transferred to the steam department, and will have charge of the power plant stock room.

During the month Mr. A. Stuart Pratt, accompanied by Mr. R. J. Hunter of the Boston Office and Mr. Lennon from Reno, visited this office.

Miss Luella O. Johnson has joined the commercial department clerical force.

Mr. Ralph A. Johnson, formerly connected with this corporation in the steam department and more recently with the Savannah Electric Company, has accepted a position as commercial engineer with the Westinghouse Electric and Manufacturing Co.

New London, Conn.

A long letter was recently received from our manager, Mr. Viggo E. Bird, describing a very pleasant trip to Denmark, where he found the business outlook very promising and his parents and brother in excellent health and spirits, despite the strenuous times of the past few years. He describes his home in the outskirts of Copenhagen, surrounded as it is with many fruit trees and beautiful gardens, as a "regular Fairyland." A more recent card from Kristiania Fra Ekeberg assures us of his continued good health and spirits. Mr. and Mrs. Bird and their children expect to be abroad until October.

Our baseball team is making a name for itself, having won the pennant in the first series of games in the local Industrial League, and now being tied for first place in the second series. This league is made up of teams from eight of the local industries, and is well patronized by the

local fans. Dick Curran, our chief clerk, is acknowledged the star pitcher of the league.

E. S. Esty has received his discharge from the navy and is back at his old job in the engineering department. Mr. Esty came out a Lieutenant J. G.

During the month several members of our organization returned from pleasant vacations. Miss Mary Egan spent two weeks at Lake George, N. Y., Miss Ethel Keeney enjoyed two weeks at Sound View, Conn., and Messrs. Ratcliffe and Comerford spent their vacations at Middletown, Conn.

Middletown Division

Ensign Joseph H. Gann has recently returned from service, and has taken a position temporarily in the Pawtucket Power Station of the Blackstone Valley Gas & Electric Company.

Owing to the lack of housing facilities in Middletown, two home building corporations have been organized. They are the Middletown Homes, Inc., and the Mechanics Homes, Inc. The Middletown Homes, Inc., have submitted plans to contractors for the building of twenty-two new homes in one locality. The Mechanics Homes, Inc., have nearly completed the building of five, and contemplate building many more.

On July 14th the steamship "Gildersleeve," a sister to the "Battahatchee," was launched from the Gildersleeve Ship Construction Co. These are the largest vessels ever launched on the Connecticut River.

Paducah, Ky.

The International Shoe Company has completed the remodeling of its factory site and has started the production of shoes. This plant should be a great asset to the industrial life of the city, as the company will ultimately employ several hundred people and will be an added means of attracting outside labor to locate in this city permanently. With the starting of this plant "Made in Paducah" shoes are now a reality.

The Illinois Central Railroad hospital is rapidly nearing completion. The contractors are putting the finishing touches on the building. This hospital is modern and complete in every detail and the addition of its load will affect the revenues of the gas and lighting companies very favorably.

The McKinney-Guedry Wholesale Grocery Co. was completely destroyed by fire during the month, entailing a loss of approximately \$100,000. This concern not only did a large business in distributing groceries in this territory, but also conducting a pickling plant. They have moved into temporary quarters and contemplate rebuilding as soon as practical.

We have found that it has been practical to open up a gravel pit at Wallace Park. The grade of gravel is much finer and better than that which we are able to obtain from local contractors and it can be delivered to any point of our lines on the company's work car. We anticipate quite a saving from the use of this gravel.

There is considerable building activity on foot in the city at this time, and it is almost impossible to get any work done without a long

delay. There is a labor shortage, and all the local contractors have more work than they can attend to. This building activity applies not only to the residential but to the business district as well.

Mr. R. R. Ralston, commercial agent, spent his vacation in Keokuk, Iowa, during the month. Mr. Ralston was formerly connected with the commercial department of the Keokuk Electric Company.

Mrs. Jeffie Bradley, cashier, has returned from a month's vacation at Muskegon, Mich. Mrs. Bradley has been out of the office for some time, owing to illness.

The company has been rebuilding three old worn out cars at the car barns. One of these cars was placed in service during the month, and we expect to have the other two ready for use very soon. These cars are light weight, painted a Traction orange color, neat and very compact in appearance, and equipped for one-man operation. They present a very creditable appearance, and there has been much favorable comment from the public.

Pawtucket, R. I.

An outing for the employees of The Pawtucket Gas Company and the Pawtucket Division of the Blackstone Valley Gas and Electric Company was held at Rocky Point on Narragansett Bay, August 13th.

As the public utility business is inherently a 24-hour one, some employees had to attend the outing in shifts, but what was lost in time by these members was made up in their enthusiasm. Those of the company's staff who were engaged in unloading coal barges worked until the wee sma' hours so as not to miss the trip down the bay, and this same spirit was shown by all.

The steamer "Sagamore" left the Gas Company's dock at 10 o'clock with about 225 employees. An employees' orchestra of piano, violins, cornet and drums accompanied the party and added greatly to the pleasure of the excursionists. The "Sagamore" touched at Providence, where Mr. H. T. Edgar and Mr. M. L. Sperry joined the party.

After landing at Rocky Point, employees and guests marched to the dining hall, where a shore luncheon was served for those who were to stay until evening, and a shore dinner served for those who were to return at 3 o'clock. Autos were provided for those who had to return to their duties.

As the office did not entirely close until noon, those employees who were unable to go down by boat arrived by autos in time for luncheon.

After luncheon the party proceeded to the ball grounds, where sports were held and prizes awarded. The first event was a ball game between the Gas and Electric Companies, the Gas Company taking the honors by a score of 13 to 8.

Sports for the women included a 50-yard dash, won by Miss Annetta Richardson; a suit case race, won by Miss Bertha Morris; a potato race, won by Miss Annetta Richardson; a needle threading contest, won by Miss Ethel Margerison; and a ball throwing contest, won by Miss Annetta Richardson.

Events for the men, besides the ball game, included a tug of war between the Gas and Electric Companies, and won by the Electric

Company; a 100-yard dash, won by Mr. Warren Bruce; a three-legged race, won by Messrs. Stanley Hilliard and Wilfred Chandler; shot put, won by Mr. Warren Bruce; a 100-yard race for heads of departments, won by Mr. Stanley Hilliard; and a shoe race, won by Mr. Warren Cook.

Although impromptu, the most exciting event was a 50-yard coat race between Mr. M. L. Sperry, Mr. William McGregor and Mr. R. C. Brooks. While Mr. Sperry was very fleet of foot and nobly defended the Boston office traditions for speed, he was outdistanced by the local company's entry, Mr. Brooks beating him by a length.

The bake was served at 4.30, after which the Midway attractions were thoroughly "done."

The "Sagamore" left at 8.30, landing in Providence at 9.45.

The success of the outing was largely due to the untiring efforts of the Joint Committee; and the work of Mr. E. E. Nelson on the Electric Company's behalf and Mr. R. Buckminster for the Gas Company were greatly appreciated by all.

Ponce, P. R.

Business conditions for July, 1919, were below those of 1918, as a year ago the merchants were actively engaged grinding corn and making shipments of sugar and coffee.

Business conditions for the future seem good. The coffee growers will this year begin to pick earlier than usual, as they desire to take advantage of the high cost of coffee and save all the berries possible. It is expected that the crop this year will be large.

Savannah, Ga.

Mr. E. P. Brantley of the engineering department spent his vacation in Atlanta, Ga.

Mrs. H. E. Hull has resigned from the ticket auditing department, being succeeded by Mr. Alphonso O'Brien.

The following members of the accounting department have been on vacations during July: Misses Nell Cleary, Elizabeth Kempt, Caro Lucas, Messrs. Joe Comer and Carol Figg.

Mr. Swanson has resigned from the collection department.

Mr. E. P. Jones has left the accounting department to assume duties as claim investigator, Mr. Charles C. Drummond succeeding him as voucher clerk.

Mrs. Wells has resumed her old position as day telephone operator.

On July 24th the Savannah Electric Benefit Association held a very successful barbecue picnic on the grounds of the Savannah Yacht Club. The several athletic events came off in a very satisfactory manner, the Geo. J. Baldwin cup for bowling going to the "Motormen."

Tacoma, Wash.

Announcement of his resignation as manager of the Tacoma properties was made by Mr. Louis H. Bean late in August, the resignation to become effective September 1st. Mr. Bean has been with the Stone & Webster interests for the past twenty-two years, having come to Tacoma in April, 1910. Prior to his arrival in Tacoma he had been with the Bellingham, Seattle and Baltimore properties.

Mr. and Mrs. Bean left Tacoma September 3rd for Atlanta, Georgia, for a visit to his mother before taking up new work in New York on October 1st.

Mr. Bean was tendered a dinner at the Union Club by the influential business men of the city and was the recipient of a beautiful watch from the officials of the Tacoma companies.

Miss Winifred Fish, secretary to the manager, has recently returned from France, where she was engaged in American Red Cross work. Miss Fish was stationed in Paris at the General Headquarters Building.

Lieutenant M. Glen Cushing is again in the sales department, having returned from overseas service in the Army. He was stationed at St. Nazaire with Q. M. C. 830th Supply Company.

Mr. Amos Rodarmel has returned to the assistant treasurer's office, having served in the U. S. Navy.

Word has been received from Miss Margaret Smith, formerly employed in the superintendent of investigation and adjustment office, that she expects to reach home late in September, at which time she will resume her work with these companies. Miss Smith was in the Home Communication work of the American Red Cross, and was stationed at St. Aignan, France.

Mr. Claude V. Allen and family recently returned from a fourteen days' trip to Alaskan ports.

Miss Gladys Winsor, of the general superintendent's office, spent her vacation aboard the "Admiral Evans," which left Seattle August 17th. The boat went up as far as Sitka, making stops at Alaskan towns, and returned to Seattle on August 31st, a most enjoyable outing for the passengers on board.

Mr. K. C. Schluss, superintendent of power and equipment, has been enjoying several week-end fishing trips to the various lakes and rivers throughout the state.

Colonel H. G. Winsor, superintendent of investigation and adjustments, has also made several week-end fishing trips.

Mr. Rome C. Saunders, sales manager, recently returned from his vacation.

Mr. W. E. Wilmot, assistant treasurer, will take a much needed rest sometime during this month, as will Mr. W. L. Robbins, statistician.

Tampa, Fla.

Tampa citizens and business men are working to hold the 1921 Florida Centennial Exposition here.

The Tampa Glass Co. has been organized with a capitalization of \$250,000, and will build and operate a glass factory in the city. The raw material is at hand in abundance, and glass containers will be manufactured.

The past month was the wettest July in thirteen years, with a third of an inch rainfall daily, and more than three inches in one day. The month was a perfectly reasonable July in all other respects, temperature being close to normal.

The steamship "Seminole," which was built by the Oscar Daniels Company, was launched on July 19th. This ship is of 9,500 tons, has a

145-foot beam and is in length overall of about 415 feet. Work was commenced immediately on the ninth ship of Oscar Daniels' \$19,000,000 contract for ten 9,500-ton steamships.

Mr. T. J. Hanlon, Jr., manager, was in Jacksonville, Florida, August 4th.

Mr. J. H. Fuller, commercial agent of the Pensacola Electric Co., has been appointed commercial agent of this company, and assumed his duties August 1st.

Mr. G. A. Webb, formerly traffic manager, who has acted as superintendent of transportation of the Savannah Electric Co. for the past few months, and who has been appointed permanent superintendent of transportation, visited this office in July and has moved his family to Savannah.

Mr. C. S. Thorne, engineer of the Philadelphia Electric Co., and Mr. Dohm of the U. S. Bureau of Standards, were in the city August 4th securing data relative to pole lines.

Mr. B. M. Harrison, claim agent, and family, motored to Jacksonville during the latter part of July, where they spent several days.

Mr. E. T. Smith, master mechanic, and family, motored to Jacksonville during the month.

Mr. E. B. Smith of the meter department has gone to El Paso, Texas.

Mr. Gettis B. Henderson was married to Miss Annie Louise Henderson on August 5th. Mr. Henderson recently returned from overseas and is connected with the commercial department.

Miss Emma Drake, bookkeeper, has resigned on account of her health.

Mr. Geo. F. Bender has entered the accounting department as lighting bookkeeper.

Mr. A. W. H. Hirsch, salesman, has resigned.

Mr. J. E. Sheridan, formerly railway storekeeper and assistant to the master mechanic, has been transferred to the mechanical department as student.

Mr. M. C. Pelham, night shop foreman, has been made railway storekeeper.

Mr. Gregory C. Frese has returned from overseas service and has re-entered the mechanical department as register clerk.

The following employees have taken vacations during the month: H. L. Robles, power station engineer, at Anna Maria Beach; A. F. Ayala, salesman, Pass-a-Grille, Fla.; J. C. Lamb, salesman, Hendersonville, N. C.; A. M. Hewett, chief clerk, Haven Beach; Chas. Bolton, accounting department, Wakefield, Mass.; Miss Alta Vick, cashier, Thomasville, Ga.; Mrs. Mae Noland, lighting bookkeeper, Atlanta; Mrs. L. E. Edwards, transfer clerk, Miami, Fla.; C. E. Graves, railway cashier, city.

We have sold the Cosmopolitan Ice Co. three motors aggregating 175 H.P. which will be connected to our lines, replacing an oil engine installation.

R. A. Delaroderie, general superintendent of the Baton Rouge Electric Co. visited this company during the middle of August.

Mr. T. J. Hanlon, Jr., manager, visited Savannah during the month and also attended the Convention of the Southeastern Section National Electric Light Association held at Asheville, N. C., Sept. 17, 18, 19.

Mrs. T. J. Hanlon, Jr., who has been visiting in Petoakey, Mich., has arrived in Tampa.

Mr. A. S. Carney of the St. Petersburg Lighting Co., formerly chief clerk of this company, visited the office September 2nd.

Mr. C. L. Howe, lighting superintendent, has accepted a similar position with the Blackstone Valley Gas & Electric Co., Pawtucket, R. I. On the night of August 15th he was tendered a Spanish dinner at the El Pasaje, which was attended by eleven officials and department heads of the company, at which time he was presented with a watch fob appropriately engraved. The employees of the lighting department presented Mr. Howe with a handsome watch on the day of his departure.

Mr. J. J. Kates of the commercial department, has resigned to accept the position of commercial agent of the Orlando Light & Water Co., Orlando, Fla.

Mr. A. J. Monnen, electrical engineer, has been transferred to the Savannah Electric Company as assistant chief engineer.

Eugene H. Harmon has returned from overseas service with the aviation section and has assumed his former position at the West Jackson steam plant.

George A. Lucas has re-entered the employ of the company as meter tester, after two years' service with the aviation section, one year of which was spent overseas.

Mr. C. E. Patillo, accounting department, has resigned to attend Washington & Lee University and has been succeeded by Mr. F. G. Hewlett.

Mr. H. I. Boggs, lighting bookkeeper, has been transferred to the position of salesman and has been succeeded by Mr. Joseph F. Fette.

Mr. D. L. Lamb, general storekeeper, has been granted a six months' leave of absence on account of ill health and is being relieved by Mr. S. D. Blackburn of the accounting department.

Mrs. H. R. Taylor has been employed by the accounting department.

Miss Estela Zendegui, formerly connected with the line department, was married to Mr. Victor L. Mena on September 3rd. The ceremony was performed at the Sacred Heart Cathedral.

The following employees have taken vacations during the month: J. H. Fuller, commercial agent, Boston; J. E. Sheridan, mechanical department, Hyde Park, Mass.

Woonsocket, R. I.

The first annual outing of the employees of the company was held on September 4th at Lake Pearl, Wrentham, Mass. Two special cars, machines and trucks conveyed the employees, their families and friends, and in all there were about two hundred present.

Races, water stunts, contests of skill and accuracy, and a baseball game were some of the features of the day, and nearly everyone present participated in the various events.

A basket lunch was served in the spacious dining hall, and during the lunch hour Bill Flynn of the Bijou Theatre, Woonsocket, entertained the crowd with funny stories.

The ball game was won by the electric department, who took into

camp the gas department and office force the very last inning of the game.
The final score was 4 to 3.

The events and prize winners are as follows:

Peanut Race — Boys under 16

First Prize — Brousseau
Second Prize M. Kiley

Sack Race — Boys under 12

First Prize Herman Brousseau
Second Prize Vincent Donnelly

25-Yard Dash — Girls under 16

First Prize Alice Brousseau
Second Prize Lillian Beaudet

Three-Legged Race — Boys 12 to 16

First Prize Walter Donnelly
Charlemagne Brousseau

Hoop-Rolling Contest — Girls under 16

First Prize Lillian Beaudet
Second Prize Louise Carr

50-Yard Dash — Boys 12 to 16

First Prize Winfield Carr

50-Yard Dash — Boys under 12

First Prize Herman Brousseau

Tilting Match — Men

First Prize Carl Ruckdeschel
Guy C. Andrews
Second Prize Sylva E. Choquette
W. O. Davis

Canoe Tug-of-War — Men

Won by Guy C. Andrews
W. L. Cheney
F. J. Nason
Carl Ruckdeschel

Swimming Race — Men

First Prize William L. Cheney
Second Prize Milton Jennison

Canoe Race (Singles)

First Prize Sylva E. Choquette
Second Prize William L. Cheney

Nail-Driving Contest — Ladies

First Prize Mrs. G. C. Andrews
Mrs. J. Corbette

Tug-of-War — Gas vs Electric Dept., 17 men on each side
 Won by Electric Department

Necktie Race (Couples)
 First Prize Mr. and Mrs. A. Genereux
 A. Morrissey and Mrs. F. Carr

Pie-Eating Contest — Boys under 16
 First Prize L. Corey
 Second Prize John Knot

Three-Legged Race — Men
 First Prize William Angell
 A. Genereux
 Second Prize Harry Wakeley
 J. Blanchard

Handkerchief Race — Ladies
 First Prize Mrs. J. Corbette
 Second Prize Lillian Osborne

50-Yard Dash — Men
 First Prize N. E. Smith
 Second Prize Milton Jennison

Race on Paper — Ladies
 First Prize Mrs. J. Corbette
 Second Prize Mrs. William Cheney

Fat Man's Race
 First Prize Guy C. Andrews
 Second Prize William L. Curtis

Mr. H. H. Carpenter has returned from service overseas, and has again taken up his duties in the engineering department of the company.

N. E. Smith, superintendent of distribution, severs his connection with the company on September 20th to enter the electrical contracting business in Fall River, Mass.

Miss Lucy M. Williams, electric ledger clerk, who has been with the company for the past twelve years, leaves the company's employ on September 13th. Miss Williams is soon to become the wife of Luke Gilleran, who was formerly an employee of the company.

Mr. Gardner Rogers, manager, spent his vacation at Nonquitt, Mass., where his family spent the greater part of the summer.

H. J. Pettengill, Jr., commercial manager, enjoyed his vacation the latter part of August at Harwichport on Cape Cod.

N. E. Smith, superintendent of distribution, spent his vacation at Lake Winnebaukee.

C. B. Healy, accountant, left September 13th for New York and Connecticut on his vacation.

Mrs. Hugh McCoey, who has been with the company as saleswoman and demonstrator for some time, and who was one of the most popular employees that our commercial department has ever had, recently resigned her position. Mrs. McCoey has started housekeeping, and with her husband has begun again for this season the teaching of dancing.

LIBRARY NOTES

We have for disposal "The National Electric Light Proceedings," 1912 Volumes I and II, and 1913, Commercial and General; 1914 and 1915, Commercial; 1918, a single volume published for that year with no special title; also the "American Street and Interurban Railway Association Proceedings," 1909; "Engineering and Transportation and Traffic Associations," Volume I, 1910-1916, inclusive, of the American Association. We have also the magazine, bound in half leather, April-September, 1899, to October, 1918, inclusive, being Volumes XVII to XL; also loose numbers of about half of 1915 and 1916. Who wants these?

We have recently obtained, in connection with the subscription to the magazine "System," eighteen pamphlets of "Shaw Management Service." Some of these pamphlets will doubtless be of interest to the members of our organization.

The titles of the three series and of the individual pamphlets, which are reprints from "System," are as follows:

1. OFFICE MANAGEMENT SERIES.

- "Standard Instructions to Office Workers."
- "Standard Policies for Office Organization."
- "Speeding up Credits and Collections."
- "Choosing the Right Filing System."
- "Card Systems — How and When to Use Them."
- "Finding the One Right Way in Office Work."

2. BUSINESS LETTER SERIES.

- "Tested Methods That Make Letters Pay."
- "Ginger Letters That Get Action."
- "Complaint Letters That Make Satisfied Customers."
- "Collection Letters That Bring in the Money."
- "Sales Letters That Win Business."
- "16 Actual Letters That Made Good."

3. FACTORY MANAGEMENT SERIES.

- "Has Scientific Management Made Good?"
- "Buying Material and Keeping Track of It."
- "Controlling Work and Inspecting the Product."
- "Setting Tasks and Paying for Them."
- "Installing the System and Making It Work."
- "How 12 Factories Applied Scientific Management."

"*How the Government Handled Its Labor Problems during the War*," is the general title of a handbook of the organizations associated with the National Labor Administration, containing also notes on their personnel, functions and policies. It was

prepared by the Bureau of Industrial Research, 1722 H Street, N. W., Washington, D. C. It is a 48-page pamphlet and should prove of great value when the history of the war is written up, although on account of the changes in all war boards it is probably of less value today than it would have been a year earlier.

We have a convenient *list of abbreviations of electrical terms*, compiled in this office according to the style of the American Institute of Electrical Engineers, and it will be convenient to consult the Library copy when emergencies arise to ascertain the meanings of obscure abbreviations.

Publication Department of the *Russell Sage Foundation*, 130 East 22nd Street, New York, has issued a pamphlet catalogue of the publications of the Foundation, which is conveniently arranged by author and by list of titles, with considerable comment on the various reports and monographs. It affords a good sample of what a publisher's catalogue can to advantage be.

An Educational Movement to Inform the Public with Reference to the Industrial Development of America, under the direction of Mr. J. E. Jones, Continental Trust Building, Washington, D. C., has among its objects to interpret the evolution of production through the utilization of mechanical power and machinery in industry and transportation, and to point out the benefits which have accrued therefrom to all the people — higher standards of living, more general diffusion of wealth, improved working conditions, better relations between employers and employees; and to help to preserve the principles of individual opportunity inscribed in the Constitution of the United States, and to that end to support fair and proper regulation and control wherever necessary, and to oppose extension of public ownership and operation whenever proposed.

State of New Hampshire has issued a report on *water power conservation and water power* in co-operation with the United States Geological Survey. It does not appear to whom a letter should be written in order to obtain a copy of this report, though quite likely by addressing the Secretary of State, Concord, New Hampshire, a copy may be obtained. The map that goes with it is likely to be convenient for other purposes as giving a good list of cities and towns in the State. The report appears to be the first one published dealing with New Hampshire water supply with any degree of thoroughness.

Bibliography and Index of the Publications of the United

States Geological Survey relating to Ground Water, with the title Water Supply Paper 427, issued by the United States Geological Survey in 1918. It is in keeping with similar publications that the Survey has issued in times past and should prove of great value.

LIBRARY OF STONE & WEBSTER

Recent Accessions

(20) Electrical, (30) Steam Engineering

- 475 Report on proposed hydroelectric development on St. Francis River, at Hemmings Falls, Quebec, for the Southern Canada Power Co., Ltd. New York [1914]. 12p, 8½x11, map. *7260.-So88.0732
- 476 Saving steam in industrial heating systems. U. S. Bureau of Mines. Technical Paper No. 221. Wash., 1919. 14p, 6x9, illus. *6876.Tp221
- 477 Economy of certain Arizona steam-electric power plants using oil fuel. C. R. Weymouth. New York, 1919. 15p, 6x9. V*072.W5479
- 478 Chemical engineering practice: a five-year course in chemical engineering. Mass. Institute of Technology, Cambridge, nd. 15p, 5½x8½. *1461.T22.074

(40) Mining

- 479 Our mining supplies: bibliography compiled under the direction of G. M. Wood. U. S. Geological Survey Bulletin 666—GG. Wash., 1919. 58p, 6x9. *6874.B666—GG
- 480 The coal catalog combined with coal field directory for the year 1919....Keystone Consolidated Publishing Co. Pittsburgh [c1918]. 671p, 9½x12. *093.K5245.1918. Also, supplement to 1918 edition, issued March 1, 1919. 92p, 9½x12. *093.K5245s.-3/1/19
- 481 Coal resources of the Americas. [Reprinted from the Oct., 1918, issue of the Bulletin of the Pan American Union.] Wash., 1919. 24p, 6½x10, illus, map. V*075.P192
- 482 Fifty years of iron and steel. J. G. Butler, Jr. Youngstown [c1919]. 145p, 6x9½, illus. *0753.B9771
- 483 Review of the geology of Texas... University of Texas. Bulletin 44. Austin, 1919. 178p, 6x9, map. *5261.0751
- 484 Bibliography of petroleum and allied substances in 1916. E. H. Burroughs. U. S. Bureau of Mines. Bulletin 165. Wash., 1919. 159p, 6x9. *6876.B165

(50) Railways

- 485 Moody's Manual of Railroads and Corporation Securities, twentieth annual number. Industrial section, 1919. Poor's Publishing Co. New York [c1919]. 2971p, 6½x9½. *02.M77in. 1919
- 486 Collapse menaces transit systems: situation in New York similar to that affecting entire six-billion-dollar industry; record in 1918. H. C. Clark. [In] New York Times, Feb. 9, 1919. unpag., 8½x11. *0221.C548
- 487 Report of the general Committee of Fifty-five known as the Tramway Adjustment Committee, appointed by the Mayor. Denver, Col., Jan. 25, 1919. 20p, 6x9. *5531.T6847.0521
- 488 The Plumb plan for railroad control: an analysis and a criticism. Mass. Chamber of Commerce. Cambridge, nd. unpag., 6½x12. *039.C35
- 489 Dealing with the demand of the railroad men to surrender American sovereignty to them. Manufacturers' Record Supplement, 8/14/19. Baltimore, 1919. 24p, 9x12. *039.M3197
- 490 A suggestion for the consolidation and capitalization of railroads. G. P. Johnson. New York, nd. 14p, 6x9. *022.J632

- 491 Correspondence between the President and the Counsel of the National Association of Owners of Railroad Securities in respect to the pamphlet by R. S. Lovett, President, Union Pacific System, entitled "Comments on the Railroad Problem." Baltimore, 1919. 27p, 6x9. *022.N2137
- 492 The railroad problem: comments on certain methods suggested for solving it. R. S. Lovett. New York, 1919. 76p, 5x8½. *022.-L947
- 493 Annual report of Employees' Mutual Benefit Association of Minneapolis Street Railway Co., the St. Paul City Railway Co., the Minneapolis & St. Paul Suburban Railroad Co., and the Minnetonka & White Bear Navigation Co. Feb. 1, 1918-Jan. 31, 1919. 16p, 6x9. *052.Em735
- 494 Catalogue of railroad mortgages. Prepared jointly by the Pliny-Fisk Statistical Library of Princeton University and the Bureau of Railway Economics. Wash., 1919. 163p, 6x9. *096.-B89c

(73) Sociology and Education

- 495 Interim report of the European Commission of the National Industrial Conference Board, July, 1919. Boston [c1919]. 34p, 6x9. *029.N2133ir
- 496 Hours of work as related to output and health of workers — metal manufacturing industries. Research Report No. 18. July, 1919. National Industrial Conference Board. Boston [c1919]. 62p, 6x9. *0317.N2133.No.18
- 497 Referendum No. 27: report on industrial relations. Chamber of Commerce of U. S. A. Special bulletin, Aug. 1, 1919. Wash., nd. 22p, 8½x10½. *6800.C35.029.8/1/19
- 498 Report of Royal Commission on industrial relations... regarding industrial relations in Canada... Ottawa, 1919. 28p, 6½x9½. *7200.R812.05
- 499 Causes underlying the social unrest (an address before the Iowa Bankers' Convention, Fort Dodge, Iowa, June 24, 1919). G. E. Roberts. New York [1919]. unsp, 6x9. *029.R542
- 500 Eighteenth annual directory of labor organizations in Mass., 1919. Labor Bulletin in No. 127... May 1, 1919. Mass. Bureau of Statistics. Boston, 1919. 65p, 6x9. *1402.093.1919
- 501 Shaw Management Service. Factory Management Series. Set of six. Office Management Series, set of six. Business Letter Series, set of six. Pamphlets, 8½x11½. Published by A. W. Shaw Co., New York, and reprinted from "System." *0291.Sh26fm, om & bl
- 502 Thirteenth annual report of President and Treasurer of The Carnegie Foundation for the Advancement of Teaching, 1918. New York, 1918. 162p, 7½x10. *058.C215.1918
- 503 Third annual report of the National Research Council: established in 1916 at the request of the President of the U. S. under the charter of the National Academy of Science, acting as the division of science and research of the Council of National Defense. Wash., 1919. 74p, 6x9. *6839.N2138.1919

(74) Finance

- 504 Regulations: series of 1917. Federal Reserve Board, June, 1917. Wash., 1917. 25p, 8x10. *6800.F317.025
- 505 Theoretical depreciation: a menace to the public and the investor. G. N. Webster. New York, nd. 32p, 8x10½. *024.W3935

(76) Legal

- 506 Reports of decisions of the Public Service Commission, 2d District, State of New York, from Jan. 1, 1918, to Dec. 31, 1918. Vol. 7. Albany, 1919. 383p, 6x9. *1705.D35.Vol. 7.1918

- 507 Opinions and decisions of the Railroad Commission of the State of Wisconsin. Vols. 19 and 20, March 9, 1917, to May 29, 1918. Madison, 1919. vp. 6x9. *2804.D35.Vols.19&20
- 508 Hearings before the Committee on Banking and Currency of the U. S. Senate, 66th Congress, 1st Session, on Senate Bill No. 2472: a bill to amend the Act approved Dec. 23, 1913, known as the Federal Reserve Act. Wash., 1919. 28p, 6x9. *6800.0315in
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- 529 Indexed periodicals: a list of periodicals found most valuable in libraries... The H. W. Wilson Co., New York. unpag., 8½x11. *096.W693p
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COUPONS AND DIVIDENDS DUE

	Per Cent.
Sept. 1, *Blackstone Valley Gas and Electric Co., Common Stock (\$50 par)	2
Sept. 1, *Connecticut Power Company, The, Preferred Stock, 6 per cent	1½
Sept. 1, *Connecticut Power Company, The, Common Stock	1½
Sept. 1, Edison Elec. Ill. Co. of Brockton (Coupon Notes) 5s, 1921	2½
Sept. 1, Galveston-Houston Electric Company (Coupon Notes), 7s, 1922	3½
Sept. 1, Jacksonville Traction Company 5s, 1931	2½
Sept. 1, *Key West Electric Company, The, Preferred Stock, 6 per cent	1½
Sept. 1, Northern Texas Electric Company, Preferred Stock, 6 per cent	3
Sept. 1, *Northern Texas Electric Company, Common Stock	2
Sept. 1, Pacific Coast Power Company 5s, 1940	2½
Sept. 1, Seattle Electric Company, The, Seattle-Everett, 5s, 1939	2½
Sept. 15, *El Paso Electric Company, Common Stock	2½
Sept. 15, Galveston-Houston Electric Company, Preferred Stock, 6 per cent	3
Oct. 1, Beaumont Traction Company 5s, 1943	2½
Oct. 1, Columbus Electric Company 5s, 1933	2½
Oct. 1, Columbus Power Company, The, 5s, 1936 ...	2½
Oct. 1, Connecticut Power Company, The, 5s, 1963 ...	2½
Oct. 1, Everett Railway and Electric Company 5s, 1921	2½
Oct. 1, Everett Railway, Light and Water Company 5s, 1925	2½
Oct. 1, Galveston-Houston Electric Railway Company 5s, 1954	2½
Oct. 1, Haverhill Gas Light Company, Capital Stock (\$50 par)	2¼
Oct. 1, Houghton County Traction Company, Preferred Stock, 6 per cent	3

*Payable quarterly.

COUPONS AND DIVIDENDS DUE

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			Per Cent.
Oct.	1,	Nevada Power, Light and Water Company 6s, 1932.....	3
Oct.	1,	New London Gas and Electric Company, The, 5s, 1927.....	2½
Oct.	1,	New London Gas and Electric Company, The, 5s, 1929.....	2½
Oct.	1,	Savannah, Thunderbolt and Isle of Hope Rail- way, The, 4s, 1947.....	1
Oct.	1,	Tacoma Railway and Power Company 5s, 1929	2½
Oct.	1,	Woonsocket Electric Machine and Power Com- pany 4½s, 1943.....	2¼

Dividend rates are based on the last declaration.

*Payable quarterly.

Quotations on Securities

OF

Companies under Stone & Webster Management

SEPTEMBER 2, 1919

The Securities Department executes orders on commission for those wishing to purchase or sell.
Requests for information in regard to the companies will be answered promptly.

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Ab. & Rock., The El. { Notes, July, 1923 Lt. & Pr. Co. of	7%	99½	No	Pref	8%	120
Baton Rouge { Bonds, 1939 Elec. Co. { Notes, Jan., 1920	5% 6%	85 99½	6%	85		.....
Blackstone Valley Gas & Elec. Co.	5%	92½	*6%	95		
Cape Breton Elec. Co., Ltd.	5%	85	6%	75	3%	30
Central Mississippi Valley Electric Properties	No	Bonds	*6%	40		5 N
Chicago, Wilmington & Franklin Coal Co.			*6%	90		100
Columbus Elec. { Bonds, 1933 Co. { Notes, July, 1922	5% 6%	85 97½	6%	78		25
Columbus Power Co., The	5%	92		.....		.....
Connecticut Power { Bonds, 1963 Co., The { Notes, Jan., 1920	5% 6%	90 99½	*6%	85		
Connecticut Valley { Serial Bonds Lumber Co. { June, '22-'34	6%	97½				
Eastern Texas { Bonds, 1942 Elec. Co. { Notes, Aug., 1921	5% 7%	88 100	*6%	83	5%	61
Edison Elec. Illg. { Bonds, 1930 Co. of Brockton { Notes, March, 1921 Notes, Dec., 1919	5% 5% 6%	100 100 100	No	Pref	8%	123
El Paso Elec. Co. { Bonds, 1932 Notes, 1920	5% 6%	91 99	6%	85	10%	85
Fall River Gas Works Co.	No	Bonds	No	Pref	12%	177
Galveston Elec. Co.	5%	83		.....		.....
Galveston-Houston { Notes, March, 1922 Elec. Co. {	7%	99½	*6%	68 ^B / _L		15 ^B / _L
Galveston-Houston Elec. Ry. Co.	5%	85	No	Pref		.....
Haverhill Gas Light Co. (Stock par value \$50)	No	Bonds	No	Pref	9%	60
Houghton County Elec. Lt. Co. (Stock par value \$25)	5%	92½	6%	18½	5%	14
Houghton County St. Ry. Co., The	5%	98	No	Pref	No	Com

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Houghton County Traction Co.	5%	85	*6%	65		15
Houston Elec. Co.	5%	98 ^B / _L		.....		.....
Jacksonville Elec. Co.	5%		No	Pref	No	Com
Jacksonville Traction Co.	5%					
Keokuk Electric Co.	6%	100	*6%	85		.....
Key West Elec. Co., The	5%	80		.....		.....
Lowell Elec. Lt. Corp., The	No	Bonds	No	Pref	10%	152½
Mississippi River Power Co.	5%	79 ^A / _B		52 ^A / _B		14 ^A / _B
Northern Texas Elec. Co.	5%	85	6%	75 ^B / _L	6%	60 ^B / _L
Northern Texas Traction Co.	5%	91	No	Pref		.....
Pacific Coast Power Co.	5%	90	No	Pref	No	Com
Pensacola Elec. Co.	^{Bonds, 1931} ^{Notes, Jan., 1921} 5% 7%	80 99		50		5
Ponce Elec. Co.	6%	95	No	Pref		.....
Public Service Investment Co.	No	Bonds	*6%	75		20
Puget Sound Elec. Ry.	5%	85 ^B		.....		.....
Puget Sound Power Co.	5%	92	No	Pref	No	Com
Puget Sound Trac., Lt. & Pr. Co.	^{Notes, 1921} 7%	100	*6%	60		14
Railway & Light Sec. Co.	^{First Series, 1935} 5%	95	*6%	83	6%	80
	^{Second Series, 1939} 5%	92½				
	^{Third Series, 1939} 5%	92½				
	^{Fourth Series, 1942} 5%	91½				
	^{Fifth Series, 1944} 5%	91½				
	^{Sixth Series, 1946} 5%	91				
Savannah Elec. Co.	5%	60 ^B / _L				
Seattle Elec. Co., The	^{1st Mortgage, 1930} 5%	95 ^B	No	Pref	No	Com
	^{Cons. & Ref., 1929} 5%	91 ^L				
	^{Seattle-Everett, 1939} 5%	85				
	^{The Seattle Ry., 1921} 5%	97				
Sierra Pacific Elec. Co.	^{Notes, Feb., 1922} 7%	98½	*6%	55		5
Tacoma Ry. and Pr. Co.	5%	80	No	Pref		.....
Tampa Elec. Co.	5%	93	No	Pref	10%	115
Whatcom County Ry. & Lt. Co.	5%	85	No	Pref	No	Com

Quotations are approximate. All stocks \$100 par value unless otherwise specified.

*Cumulative. †Ex-Dividend. A. Listed on London Stock Exchange. B. Listed on Boston Stock Exchange. L. Listed on Louisville, Ky. Stock Exchange. N. Common shares have no par value. X. Ex-rights.

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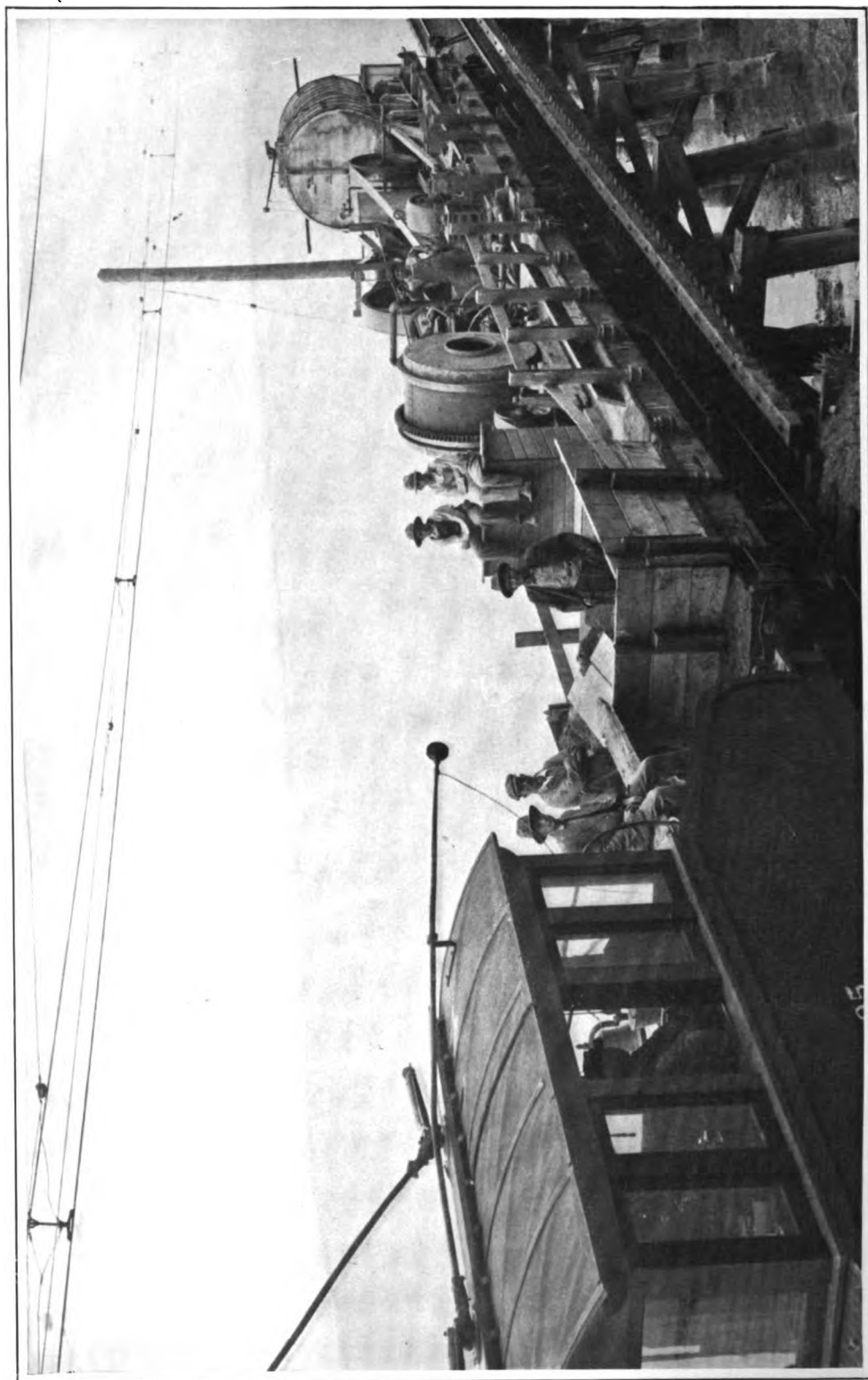
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GUNTING TRAIN ON BELLINGHAM DIVISION OF PUGET SOUND TRACTION, LIGHT AND POWER COMPANY

STONE & WEBSTER JOURNAL

OCTOBER, 1919

EDITORIAL COMMENT

The Devil's Work

This is a period of world-wide unrest. From what does it spring? We know no better explanation than that of Cardinal O'Connell of Boston in a recent address before a body of laymen. The Cardinal, who is a ripe scholar, a man of wide and close observation, and an executive of exceptional ability, declares that the present unrest is due to envy and desire for pleasure, that the quest of pleasure is driving the world mad.

It is the right of all persons, he says, as far as their ability goes, as far as the real contentment of life allows, as far as the real values of life permit, to acquire and enjoy the really good things of the world. "God knows," he adds, "we do not want our people to be forever in a condition of semi-slavery. We want them to enjoy rights equally with those about them, and to attain to the positions in life which are due to their intelligence, to their integrity, to their labor and to their perseverance." He then speaks of the struggle for the so-called essentials of life and maintains that after all they make only the smallest part of life. "The great bulk of humanity," he continues, "is quite happy without all these things of the world. Of course, nowadays, by the constant dinning into their ears of this class hatred and the envy which is so rife everywhere, they are never satisfied. Of course, conditions are changing with this new atmosphere, this new thing brought on of late. Actually, it seems like the work of the devil. Men who were contented and happy before are now thoroughly discontented. They never can have the millions of their neighbor. But they don't know how tired and sick he is of the worries they have brought upon him. They are told they must never cease until they have what he has."

"Well," he said in continuation, "there is only one thing that can set us right with regard to these things and keep us sane. The world is really going mad on this subject (the subject of pleasure), of this whirl of good times and nothing else. The ambitions of life are growing limitless. They never can be realized by millions and millions. They cannot be gratified. And so the world is just being teemed with discontent. Religion teaches us that the things that come from God's hands, by toil of mind and hands, are blessings from God, and we are grateful for them. That is the Christian principle. The pagan principle is just to get them. That very thing is upsetting the world. And what is the reason for it? The exaggerated importance given to these things. . . . The world will actually go insane if it follows along these lines."

Even those not permeated by the Cardinal's religious spirit must recognize the force of these words. Common sense and common honesty will bring anyone to the same conclusion, be he churchman or infidel, rich or poor, black or white, though few have the Cardinal's power of presenting the case.

Some will perhaps recall a remarkable book that was published nearly twenty-five years ago, entitled, "Reflections of a Russian Statesman." It was written by Pobiedonostseff, who was tutor to Alexander III of Russia and afterwards chief procurator of the Holy Synod. He was the most bitter, as well as the ablest, reactionary of the nineteenth century, and it was under his influence that Alexander III refused to sign the document drawn up by Melikoff, granting a constitution to Russia. Yet the impression which we gain of him from reading his book is not that of a mere bureaucrat, governed by lust of power. He seems, on the contrary, to have had a real understanding of the Russian people and a genuine solicitude for their well-being, though his manner of attesting his solicitude appears to our eyes paradoxical enough.

One of the essays in the book we have mentioned is entitled, "The Malady of Our Time," and it need not be pointed out that the Great War and its attending circumstances have not alleviated the malady, but on the contrary have intensified it. "In our time," says Pobiedonostseff, "discontent is universal. With many, discontent has developed into chronic irritability. By what is it caused? By their lots, their rulers, social order, other men, by all and everything except themselves. . . . We grow up with infinite expectations, begotten of im-

measurable vanity and innumerable artificial needs. In ancient times the number of restful and contented persons was greater, for men expected less of life, were satisfied with less, and did not hasten to extend their sphere of life. Each was held to his place and to his work by a sentiment of duty associated with them. The humble watched the lives of the rich and idle, and thinking, 'This is not for us,' resigned themselves to the impossible. Now this impossibility has become possible and attainable in the imaginations of all. The private soldier aspires to the dignity of a general, and seeks to attain it, not with hard service, with duty performed, or distinction gained, but by accident and sudden acquisition. Success is now believed to be the result of accident or good fortune, and by this belief all are incited, as the gambler by the hope of gain."

It is not surprising, in view of all this, that Pobiedonostseff should have noted a prevalence of suicide. The same phenomenon has attracted the attention of the world during the last few years. Men, women and mere children, too, seem in increasing numbers unable to bear the strain imposed on the race by false views, unbalanced judgments, inordinate desires.

What is the cause? This is Pobiedonostseff's answer: "That life has become deformed, false, and meaningless beyond belief, that order has disappeared, that all rational sequence in human development has vanished, that all discipline of thought, of sentiment, and of morals has disappeared. Corruption and disintegration have destroyed the simple, organic relations of public and family life; their place has been usurped by institutions and abstract principles for the most part false in themselves, or in false relations to life and actuality. The simple needs of the soul and body have been expelled by a multitude of artificial requirements, and the simplest sentiments have given place to sentiments complex and artificial, which seduce and irritate the soul. Vanity, which once grew commensurately with our environment and conditions, has suddenly been magnified to the immensity of the human ego, which violates all discipline and usurps an absolute dominion over life, liberty, and happiness, claiming to rule alike over circumstance and fate. The minds of men, strong and weak, high and low, great and small, all alike have lost the faculty of recognizing their own ignorance and the capacity to learn — that is, *to submit to the law of life*; while men exalt themselves to that visionary height, from which each, great or small, holds himself as judge of life and of the universe."

A gloomy picture, and doubtless overdrawn in many of its details. Yet it catches the essential fact in human life today—discontent arising from exaggerated egoism. For ordinary purposes, egoism may be defined as the belief that everything is uncertain but self, a necessary corollary being that self is paramount. Up to a certain point this is a sane and stimulating doctrine, but beyond that point it manifests itself in selfishness, wantonness, and destructiveness. Its handmaids are envy and jealousy, these qualities being never more strikingly exhibited than at the present moment. It is said, and perhaps with reason, by those who have studied the labor situation of today, that the incessant demand for more pay springs not so much from the fact that labor feels that it is not being adequately compensated for its effort, or that it is not receiving a living wage, as from the fact that in so many instances one class of labor sees another class of labor, which it knows to be no more intelligent and efficient than itself, getting more and being able to make a more affluent social display. This is likely enough. But over and above all this, there is the fact that the less efficient, who in the past were measurably conscious of their limitations and saw the folly of disregarding them, are now in great multitudes under the sway of abstract principles which they do not understand, and which, in fact, have no practical relation to life—that is, which cannot in the very nature of the case be given application in human affairs without disruptive consequences, which the less efficient can least of all hope to escape. These persons are the dupes of others, who, if not as ignorant as themselves, are on the other hand actuated by a desire to wreck the political and social structure of the world, in order to salvage what they can.

It is not surprising that Cardinal O'Connell exclaims, "Actually, it seems like the work of the devil." A sort of berserker rage has overtaken mankind. There is comfort, however, in the fact that the berserker rage always, in the end, reduced its victims to impotence, from which they emerged with renewed sanity. On many sides there are evidences of growing exhaustion on the part of the ignorant and deluded. Intelligence, even when it is the intelligence of the few against the many, is bound to win in the end.

"THE PUBLIC BE DAMNED"

BY F. J. WHITING

At Cleveland, Ohio, on September 23rd, the final draft of the coal miners' wage demands was presented to the convention there held. Briefly, they included \$8.00 a day for six hours; 60% increase on all tonnage, yardage and dead work; time and a half for overtime, which would net \$12.00 to the man working eight hours; abolishment of double-shift work; elimination of the automatic penalty clause; and the establishment of weekly pay days. The demands were presented to the mine operators (owners) by representatives from the convention, and strike orders have been issued to the local unions.

The answer of the operators, dated September 29th, is so illuminating that I present it in full.

Buffalo, N. Y., Sept. 29, 1919.

To the Representatives of the Miners of the Central Competitive Field:

We have carefully considered the demands and position of the Mine Workers' representatives, transmitted to us in writing by Acting President Lewis on September 26th. Our reply and position is as follows:

Purpose of Conference

This conference was called, at the request of the miners, "to negotiate a contract to be effective upon the expiration of the present agreement."

Present Agreement

The present wage agreement, modifying and extending the scale contract of April 1, 1916, runs "during the continuation of the war, and not to exceed two years from April 1, 1918." It was executed by the accredited and duly authorized representatives of both operators and miners on October 6, 1917, at Washington, D. C., under the supervision and with the participation of U. S. Fuel Administrator H. A. Garfield, representing the President of the United States, acting under provisions of the Lever Act, a statute still effective. At that time it was definitely understood that "the continuation of the war" would be until formal proclamation of peace by the President of the United States. That agreement is, therefore, in full force and effect until such proclamation, unless terminated by its expiration March 31, 1920.

The operators are here for the purpose of negotiating a contract to be effective immediately upon the legal expiration of the present contract, to prevent unsettlement of the industry

and hardship to the public during the busy winter months should peace be proclaimed prior to April 1, 1920 and the present agreement be thereby suddenly terminated.

Demands of the Miners

Your Acting President, Mr. Lewis, has transmitted to us, and moved the acceptance of, a list of demands. These demands are radically extravagant and manifestly impossible of acceptance, in addition to which they indicate (1) a disregard by the United Mine Workers of America of their obligations under an existing contract solemnly entered into and still in force; (2) a complete lack of authority on your part to negotiate as provided and intended by the call, and (3) include an automatic notice that unless we accept these demands you are instructed to call a general strike of all bituminous coal miners and mine workers of the United States on November 1st.

Passing for the moment the arbitrary and wholly un-American way in which we are asked to act without regard to our contract rights or to public welfare and with the unqualified strike order as an implied threat, let us review briefly the more important of your demands:

(1) In place of the existing 8-hour day, 6-day week, you demand a 6-hour day from "bank to bank," 5 days per week, which would result in only 25 hours or less of actual work per week and which, with no double shifting of working places or productive machinery as also demanded, would be a reduction of possible productive effort to practically one-half of present and altogether reasonable standards, with resulting great increase in costs. Such a demand cannot be entertained. National necessity demands the greatest possible production of essential commodities.

(2) You demand a 60% increase in wage scale, time and one-half for overtime and double time for legal holidays and Sundays. Acceptance of these demands, with the indirect increases inherent to other items of your demands, would more than double the already high cost of producing coal, with consequent large direct and indirect additions to the cost of living of every citizen and a demoralization and prostration of the industry. Such wage increases are impossible, and their attempted enforcement would react with great harm equally on the nation and on the individual miners you represent.

(3) You demand that no automatic penalty clause be written into any agreement entered into by the United Mine Workers of America. The present automatic application of penalty clauses, applying both to operators and to miners, and by the government made a requirement contingent to the government approval of our Washington Agreement, is an outgrowth of the inability of union officials to prevent illegal strikes in violation of their orders and of contract obligations. The provision has been effective, and present conditions of unrest and radicalism make such policing power in the hands of

the responsible officials of the contracting parties more than ever imperative. Such penalty clauses contain no terrors for those who in good faith abide by their self-made agreements.

(4) You demand a change from the long-established custom of having wage agreements expire in the spring, when there is least danger and inconvenience to the public, to an expiration November 1st, which is the time of maximum demand for coal. You demand other items, none of which have apparent constructive merit, but all of which tend to increase cost and decrease production. We must also dismiss these points as undesirable.

Position of the Operators

The operators have sent their accredited representatives to this conference with full power to negotiate a contract as provided by the call. We regret to find that the miners' convention from which you come has failed to vest in you corresponding power and discretion. With your authority apparently limited to a presentation of the excessive demands above set forth, and to reconvene your convention or execute your instructions to call a general strike November 1st, we are faced with the alternative of granting your demands in full or of requesting you to go back for authority to negotiate with us in conformity with the call.

The operators hold that no abrogation of the existing contract can be had prior to its legal termination, except by the mutual agreement of all parties thereto — the operators, the miners and the government. We are ready and willing to negotiate a new contract to succeed at its legal expiration the contract now in effect, but we must insist that such negotiation be entered into in a spirit of reasonableness and that the representatives of the miners be vested with their usual discretionary power to really negotiate. Only under such conditions is it possible to reach a prompt and definite conclusion and to preserve the principles of collective bargaining.

The operators come to this conference with a consciousness of the more than usually grave responsibilities resting upon them because of their duty to co-operate in the processes of post-war adjustments with which the nation is confronted; they expected the miners to approach these important negotiations in the same spirit. But with your hands tied by the nature of your instructions, and a strike threat your only impelling argument, we ask you if there is any possibility of securing results by continuing our present conference under such limitations.

Executive Committee for the Operators,

THOS. T. BREWSTER,

Chairman.

It will be noted from the above that the coal mines are being operated under a contract to which the operators, the

miners and the Government are parties, and which is to expire by limitation on March 31, 1920, unless previously terminated by a formal proclamation of peace by the President of the United States. The operators are prepared to negotiate a new contract, to be effective immediately upon the legal expiration of the present contract, but are actuated by a desire to prevent the unsettlement of the industry and the hardship to the public during the winter months that would ensue on the sudden termination of the present agreement. The miners appear to have no such solicitude; they are heedless of the effect upon themselves of an unsettlement of the industry, and equally unmindful of the suffering inflicted upon the one hundred million people of the United States. It is inconceivable that they would ignore these considerations without some ulterior and sinister motive.

This view is enhanced by the extravagant nature of their demands. The fact that they make the demands is sufficient indication that a contract means nothing to them. As industry is impossible, except on the most primitive scale, without the inviolability of contracts, it necessarily follows that the miners' aim is revolutionary, and revolutionary in connection with the most vital need of the whole community. It is impossible to escape the conviction that the public good is nothing in comparison with the selfish interests of a small minority of the people. This consideration merits the attention of the one hundred million population of this country. For the miners are characterized by a strange atavism; they would revert to a long past condition when the hand of every man was raised against his brother. Coal mining is only one branch of industry, though it is one of the most needful, and it is fair to assume that if the miners are successful in making the inviolability of contracts dead letter, labor in other branches of industry will press similar demands and with as much likelihood of success. Imagine the result.

No one can imagine it, for it transcends the imagination. Too many centuries have elapsed since a comparable state of affairs existed for us to conceive the chaos that would ensue. Yet if we do not make an attempt to conceive it, we may find ourselves in a cataclysm before we know it. If the miners have any chance of effecting their demands, the outlook is more alarming than any that has ever confronted this people. Our whole industrial, as well as our whole political, fabric is in

danger of being overthrown. The outlook would not be quite so appalling if there was any prospect of a new, though entirely different, status being created with any of the elements of stability. But there is no such prospect.

Glance for a moment at the specific demands of the miners. In place of the existing eight-hour day, six-day week, the miners demand a six-hour day from "bank to bank," five-day week. The mine owners construe this as indicating only twenty-five hours or less of actual work per week, which, with no double shifting of working places or productive machinery, as also demanded, would be a reduction of possible productive effort to practically one-half of the present standards. That this would mean a great increase in cost is obvious. It is equally obvious that this increase would have to fall upon consumers; that is, upon the whole population of the United States. In view of the present scarcity and almost unbearable price of coal, that is a contingency which no one can view with any degree of cheerfulness. The mine owners declare that the acceptance of the miners' demands would more than double the already high cost of producing coal. Even if we make some allowance for error in their calculations, it is as clear as anything could be that the direct and indirect additions to the cost of living and the demoralization of industry would be unbearable. We repeat that the extravagant and impossible nature of the miners' demands indicates an ulterior and sinister motive.

Great significance attaches also to the demand that no automatic penalty clause be written into any agreement entered into by the United Mine Workers of America. The present organization's application of penalty clauses, applying quite as much to the mine owners as to the miners, was made a requirement by the Government at Washington to overcome the inability of union officials to prevent illegal strikes in violation of their orders and on contract obligations. As no one can reasonably object to penalty clauses in connection with contracts voluntarily entered into, an ulterior and sinister motive is again apparent. It is apparent also in the determination of the miners to overthrow the custom of having wage agreements expire in the spring, when the comfort and convenience of the public would be least affected.

When a great capitalist exclaimed, some years ago, "The public be damned," a cry of horror went up all over the land.

But why any more so than in the present case? The miners are intent on playing a game of battledore and shuttlecock with the interests of the people. If the people will not protect themselves, some one should protect them. But who? The mine owners seem disposed to do it; at least they seem to recognize that they are under some obligation to the public, whereas with the miners, public interests seem to be of no account.

Perhaps a more significant feature of the mine owners' statement is that relating to the action of the miners' convention in withholding from their accredited representatives to the conference with the owners full power to negotiate a contract. This is obviously an attempt on the part of the miners to force the owners to grant their demands in full, or to precipitate a crisis. As the miners must know that the grotesque extravagance of their demands would prevent the owners from acceding to them, their purpose must evidently be to paralyze the industry, and, in addition, to bring untold suffering upon the community; in this way creating a general hysteria. In short, the miners' demands seem to have been framed with an intent to effect both an industrial and a political revolution; this end being bound to follow an acceptance of the terms quite as easily as a rejection.

Now, it is beyond reason that all the mine workers, or even a majority of them, would like to precipitate such a situation. The fact is that these extravagant terms recently laid down by the miners have the appearance of being a means rather than an end. It has been known for some time past that the radical element in certain of the labor organizations, notably that of the miners, was laboring to eject the conservative leaders in the labor organizations; in short, to put the "Reds" in full control. Civil war, indeed, seems to have broken out in the miners' organizations, and it looks as if the demands which we have been discussing were framed quite as much for the purpose of discomfiting the recognized leaders of labor as for making life a burden to the mine owners and the general public.

The whole situation may be tabulated in this way: 1 — there are the one hundred million people of the United States, to whom coal is about the first essential of life; 2 — there are the mine owners, who supply the capital and brains to see that the one hundred million people obtain the coal; 3 — there are the miners, who actually extract the coal, a feat which would be entirely impossible without the money and the brains of the

owners; 4 — there is the labor union, which does not include all the miners, but which assumes the right to dominate their whole attitude; 5 — there are two elements in the labor union, the conservative and the radical, one or the other of which assumes the right of dictating the whole policy of the union; 6 — there is a small coterie which assumes to dictate the policy of this element, be it conservative or radical; 7 — every coterie is apt to possess some one person who is its master spirit and dictator. It is quite like the house that Jack built.

That is the situation we have in this country today. A handful of men have temporarily upset things, and if they are not thwarted they will permanently revolutionize all our institutions. We call this nation a democracy, but this is mere mockery if the present state of affairs is to continue. What we shall soon have is oligarchy of the worst sort. We may think that the end will be a democracy of labor instead of an oligarchy of capital, but there is no such thing as a democracy of labor. It is much more difficult for labor to be democratic than for capital to be oligarchical. It is doubtful if the real leaders of the so-called labor democracy have ever had any use for real democracy. Karl Marx himself apparently had none. Marx founded the International, which was to be a union of manual laborers of the world. It was, of course, necessary to have a central executive. When it was proposed that the laborers of each country should be represented by a president in the supreme general council, Marx put his foot down. As a matter of fact, Marx ran the International any way he saw fit. He was an autocrat in every sense of the word.

Ferdinand Laselle, an illustrious personality among the Socialists, once said, "It is well recognized by the masses of the laborers themselves that if their wills are to be effective they must be forged into a single hammer, and that this hammer must be wielded by the sinews of one strong man." Labriola, an Italian revolutionist and a leader of Syndicalism, is on record as saying, "It is certainly not revolutionary tactics to entrust the sword of Brennus to any body of men, who like the present proprietors, are inclined to the sloth of conservatism." And he adds, "True democracy is the centering of power in an *elite*, who can best judge of the interaction of social cause and effect."

The thing this country has always had the greatest horror of is "one man government." Yet it looks as if we should have it before long if we do not bestir ourselves. And it will not be

one man government by a patriot like Washington, or a military genius like Napoleon, or an amiable despot like Marcus Aurelius, but by a half-baked intellectual like Lenine, whose power is commensurate with his ability to play with the ignorance and greed of a nation willing and eager to be duped.

VALUE OF PUBLIC UTILITY WAR EXPERIENCES AND THEIR EFFECT ON THE FUTURE*

BY W. H. McGRATH

The world war of 1914 to 1918 was the most stupendous catastrophe in the history of civilization. Its effect, while it lasted, on the nations involved was, and its effect for generations to come will be, felt on the social, business and economic life of all our people. Almost all human relations, individual, national and international, have been disturbed and readjusted on account of the war, and it seems to me that we ought, at this time, to look at the effect upon our industry during the past few years and at the probable effect in the years to come, in a broad way without going too deeply at this moment into the detail considerations affecting any particular utility or class of utilities.

Some extremely interesting developments have taken place on this coast during the period of the war. Utilities which had been suffering from disastrous competition laid aside for the moment the effort to secure new business and discontinued practices that involved a waste of labor and material, since both were needed by the nation as a whole. Corporations connected up their systems with high tension transmission lines and made the surplus capacity of one available to several, with the same object of conservation in view. This was particularly true on our Western Coast in the State of California. All kinds of operating costs mounted excessively and are still going up, and in many cases new problems in the handling of labor had to be disposed of. Collective bargaining and the practice of dealing with employees through authorized representatives, with the right of appeal of decisions to the National War Labor Board, entered into our business lives for the first time. We felt, along with other industries, the sharp effect of the draft for the nation's armies on the personnel of our companies, and sometimes were hard put to it to fill the vacancies with acceptable men. We put women in the places of enlisted men in many cases, and I think that most of us were rather surprised at the way the women took hold of the work and often did it quite as well as the men they displaced.

We found it necessary to go to larger expenses in guarding

*Address before Northwest Electric Light Association, Seattle, Wash., September 10, 1919.

our properties against the public enemy, who by underhanded methods might seek to destroy the service to communities and cripple the war industries dependent on this service.

We were impressed anew with the classification of our business as a vitally "essential" industry in the meaning of the War Department, which determined what classes of business should not be interfered with in the operation of the draft.

All these and many more "experiences" fell to each of us during this period, and each property, in its own way and governed perhaps by its own general policy, disposed of them. But little good can be accomplished by recounting specific experiences now, and after all it seems as if the period after the war and not during the war is producing the greatest strain on our utilities, because of the non-elastic character of our business and the prejudice or ignorance of the people at large with regard to the fundamental natural economic laws which govern it.

I feel quite keenly that the public service business needs a national treatment. Of course we must recognize that the laws of the states, under which our companies are incorporated, and the franchises and ordinances of the cities and communities in which we do business, determine in many cases the conditions under which our public service properties must be operated and the procedure necessary to follow in order to secure changes of rates or of service, the approval of securities, etc.; but when I say that the problems of our industry are a national matter I mean that the problem of establishing in the minds of all of the people the fundamental basic economic facts, which in the end determine the possibilities of fair rates and adequate service for the people, is a national problem. From the very nature of it it cannot be local. Every public utility at one time or another has attempted to tell the people of the community it serves the truth about its business. This has been done in many cases by newspaper publicity (which is always discounted, because the reader is a patron of the utility and sees a selfish motive in the argument); by personal addresses of the executives, which after all reach only a small proportion of the public and in most cases are heard only by two classes of people — those who know that the statements are correct but are more or less indifferent and do not do anything about it, and those who are inherently hostile, often for selfish reasons involving their own political or pecuniary advancement; and by other more or less spasmodic and ill-timed means.

Two great popular modes of educating the public, as it is called, seem to me not to have received the attention that they deserve. One of these is the moving picture theatre and the other is the popular magazine. Of the two, it is my personal opinion that the second holds forth the promise of the best results, but it goes without saying that no such magazine as the *Saturday Evening Post*, for instance, which is read by millions of readers every week, can treat either editorially or by way of analytical article or story, of the problems of any particular utility. We could only hope that by continued, intelligently applied effort of the best available brains, the mass of the people could finally be made to understand the basic economic principles which must govern the operation of a regulated public service business. It is a tremendous undertaking to attempt to make the people of America see clearly and think clearly on such matters. It is going to take a long time to get them to take the trouble to do this; but the people of America make our laws, establish the conditions under which our regulatory bodies act, and in the last analysis determine by their state of mind the ultimate success or failure of the private operation of our industry.

The most lamentable ignorance of the fundamental laws of economics is seen every day in discussion on the street and in the home and in the daily press of the "High Cost of Living" and its causes as the result of the world war. Here is a subject that every individual is interested in, and it is not surprising, of course, that people do not understand all about it, because nobody understands all about it; but the vast majority of the people do not understand anything about it. How, then, can we expect them to understand the fundamental facts determining the cost of the establishment of properties, operating expenses, maintenance and depreciation; how and why a company is financed; what the man who puts his money into a privately owned utility is certain to expect; the effect of short term franchises, taxes and other burdens upon rates; the necessity of establishing and maintaining adequate surpluses to take care of contingencies; the reasons why profit sharing with employees would be gladly adopted by many companies provided there were any real profits in the business to share, and provided the employees would share losses as well; and all the other matters which Mr. American Citizen ought to understand if, under democratic government, we are going to secure simple justice.

All public utilities (and this includes steam railroads) require immense investments in proportion to their gross earnings, as compared with other ordinary lines of private business. In order to secure a continuance of fresh capital, which is always needed for the normal growth and expansion of our properties, not only should the investor, who has put his money into the enterprise already, be assured of an interest return and of ultimately getting his capital back, but the man who today and next year is going to be asked to put new money into the enterprise must be doubly reassured in the light of the past couple of years' experience, or else he simply is not going to put his money into the property, and extensions to the service of the utilities under private ownership will cease.

Practically all of our states have Public Service Commissions and the public service business is subject to continuing regulation. No large profits can ever be earned for a long period of time, and an absolutely necessary corollary to the fact that the margin of earnings must always be small is that this margin must always be definitely assured. This is not a theory; it is a fact, and a stubborn fact. Up to the point of confiscation, where we fall under the protection of the Constitution of the United States, the earnings, and therefore the property of a utility, by undue burdens in the shape of taxes or other charges of a public nature, greatly increased operating expenses due to the demands of labor, or too low rates due to the inability or the lack of inclination on the part of regulatory bodies to make the rates adequate, may be made to suffer, — and the present plight of the street railways all over the United States, which are falling into the hands of receivers one after another, is a good illustration of the lack of flexibility in our business to take care of the changes in economic conditions brought about by the war. It may be that many of these properties cannot be saved; that the savings of hundreds of thousands of men, women and children invested in the securities of these properties may be lost, or at least depreciated in value. We may even go so far as this, but no power under the sun can compel any man to put more money into such a business proposition unless he wants to do it.

The continuance, then, of successful private ownership and operation of utilities serving the public, is absolutely dependent upon a clearer understanding on the part of the public of our problems. If the public cannot, by whatever

means is adopted or by all means together, be made to see these problems and to act intelligently in the solution of them, the only other possible answer, if the public is to get public service, is governmental and municipal ownership with whatever of good or of evil that may produce.

The particular business of the members of this Association is that of furnishing light and power. Unlike most other businesses which have undergone the stresses of the war period, we cannot at will shut down our plants when we please, and in many cases we cannot even decide as to whether we would like to expand our business or not. We have undertaken a legal obligation to serve the public and we have undertaken the obligation to raise the funds necessary; this can be done if conditions are right, and it simply cannot be done if conditions are not right. One would sometimes think that it was criminal for a public utility to be prosperous. As a matter of fact, from the standpoint of everybody concerned, — the public served as well as the owners of the property — this is the most desirable condition. If it isn't prosperous, not alone will the holders of securities suffer, but the employees must suffer, due to failure to secure the wages which they ought to get; the community will suffer on account of poorer service and failure to secure adequate extensions of service. If in prosperous years a utility is allowed to accumulate a surplus which will be adequate to take care of periods of stress, it might be possible to weather a temporary condition of loss of earnings, and this is one of the best arguments why utilities should accumulate and should be allowed to accumulate a reasonable surplus.

In our particular business — I am speaking now of the light and power business — it is clearly evident that our rate system is not flexible enough to take care of such violent changes in conditions as have taken place in the last couple of years. Companies ought to establish and commissions ought to approve a more flexible system of rates which would take care of changes in conditions almost automatically.

The present procedure of securing approvals of increases in rates from many Public Service Commissions is too cumbersome and consumes too much time. No great harm can result to anybody from having a more flexible system of rates which would automatically take care of changes in conditions, such as abnormal increases in operating expenses due to meeting the necessary demands of labor, which is struggling to cope with the

high cost of living. Suppose the properties do, for an interval, secure a little more or less by a flexible system of rates than the fair return on the fair value of our properties devoted to public service, which is assured to us provided it is in the business. What harm does that do under continuing regulation? If we accumulate a little greater surplus, more or less, it would simply act as a cushion to prevent more violent changes in rates or in service, or both, and may very well influence the cost of raising money, which is just as much a cost to be paid for by the consumer of our service as is the cost of buying coal or of buying labor. In the last analysis, the consumer of our service is supposed to pay the full costs anyway, and certainly the cost of money is an absolutely vital factor in the total cost; — and right here I want to impress upon the members of this Association that they make their own official bodies in their communities understand that high cost money simply increases the cost of service.

We are right now in a period where construction costs are from 80 to 100 per cent higher on the average than they were five years ago. These figures are the result of careful analysis made by our engineers. It is also a fact, as many of you will find who have to raise new money, that the cost of money has tremendously increased since the beginning of the world war. This is perfectly natural. On the one hand there has been a tremendous destruction of property and of lives which would have produced property, and on the other hand has been the issue and distribution, by all of the governments involved in the war, of billions and billions of dollars of government bonds or promises to pay. The amount issued by six of the larger governments alone for purely war purposes is stated in a recent article on the subject to be more than twelve times the total amount of gold and silver mined since the beginning of the world. With such a market for money, not to speak of the innumerable domestic and foreign private opportunities opened since the close of the war, is it any wonder that the investor can get a higher rate for the use of his capital than he has been getting in the past? If you will take just these two items alone — the cost of construction and the cost of money — and apply them to any new element of development in your business, you will find that the fixed charges or the carrying cost of any expansion at this time will be from three to four times as much as it was five years ago. Not only must we secure moderately higher

rates to take care of increasing operating expenses of existing plants, but we must secure tremendously higher rates to take care of new business loaded on new plants, if we are going to come out anywhere near even.

Each company, large or small, in this Association has had its own peculiar problems brought about by the war, and in many cases still unsettled. Problems of physical operation due to difficulties of obtaining men and supplies; problems of construction due to the sudden imposition of unexpected load conditions to care for war industries; problems of a legal, accounting or commercial nature due to the sudden changes and tremendous activity of an essential industry under the stress of a national emergency. On the whole, I think it safe to say that no body of citizens or organized industrial undertaking performed its full duty to the nation more patriotically and whole-heartedly than the public utilities, and none with less government help or guarantees against loss. And the individuals associated with our companies have in full measure given of their service to the nation when called upon, either for military duty or for the many allied activities of civilian life, which were essential to the proper conduct of the war.

The peculiar problems of the individual companies will be disposed of by those companies, but out of all the confusion and turmoil and trouble of wartime experiences these conclusions of overwhelming importance remain with me:— (1) The ordinary American citizen does not understand the basic, fundamental, economic facts which absolutely control the destinies of our utility corporations, and if private ownership is to continue and be successful, he must be made to understand them; and (2), this can only be done in a national way and applied to our whole industry rather than to individual properties, and it must be done by the use of every vehicle of popular presentation available, especially the popular magazine and the moving picture theatres.

I recommend that your Association appoint a special committee instructed to take the initial steps in securing such a national effort by the public service industry as a whole. It will cost a very great deal of money, but it will be worth it.

This general outlook on the whole situation may be criticized as pessimistic. It is pessimistic, but I would not have anybody consider that I believed it to be hopeless.

I expect no substantial disagreement from the members of

this Association with the statements of conditions outlined in this paper, but the one point of immediate practical importance is that something has got to be done about it and we might as well start it, and start it now.

GOVERNMENT OWNERSHIP AND ITS CONSEQUENCES*

BY SAMUEL SCOVIL

Government ownership and operation of the railroads is seriously proposed at this time. The discussion in reference thereto seems to be almost entirely confined to its desirability from the point of view as to:

1. Whether the roads will be operated as efficiently or more efficiently.

2. Whether the public will get better or poorer service.

3. Whether political considerations and log-rolling methods will control rate making.

4. Whether in service furnished, one locality will be favored as compared with another, as is now the case in the matter of public building, where some communities get structures away beyond their future needs while others are refused consideration for their present needs.

All of these things are important, but they are of secondary importance as compared with the consequences which the adoption of a policy of Government ownership and operation will have upon the institutions of our country.

The widening of Government activities into the realm of business is fraught with the gravest danger to the individual citizen. Instead of feeling his government's hand only incidentally and occasionally, as was the case before this war if he was a good citizen, he will feel his government's compelling and restraining hand in most of his daily affairs until he will, like the Germans under kaiserism, resign himself to the prescribed routine — his individual initiative deadened until he obediently takes his prescribed place in the carrying out of the orders of those in power.

Government's Monopoly Odious

Someone has properly said that there is no monopoly so odious as monopoly of government. If the government takes the railroads, and the telephones and telegraph systems, ventures into other fields of business will follow. This thing grows by what it feeds on. After the railroads will come the

*Reprinted from the Ohio Journal of Commerce. Mr. Scovil is a member of the executive committee of the Ohio State Board of Commerce.

demand for the control and operation of all industry having to do with the development and production of so-called "natural resources," such as the coal and ore mines, water power, etc., and finally the land.

Imagine, then, what a horde of government office holders there would be and the consequent powerful bureaucratic system which would be established among us under such a condition of affairs. These office holders would be the government. What was kaiserism but a tremendous bureaucratic machine with the kaiser at its apex? An English writer of prominence, Charles Lowe, in his work "Prince Bismarck," written some years before the war, says:

"The German Emperor always has been popularly supposed to be a kind of military autocrat, but as a matter of fact there is no sovereign in all Europe so constitutionally tied down and circumscribed as he. — The German Emperor is anything but an autocrat, and the vicarious despotic power of his Chancellor is only such as has been conferred upon him by what is probably one of the most evenly balanced and beneficent constitutions in all Europe."

According to this writer, who was the correspondent of the *London Times* at Berlin for some time, the kaiser had thrown about him all supposedly needful constitutional restraints, yet the world had seen what he became as the head of a powerful bureaucratic machine, which associated with itself all military power, and arranged such opportunities for capital as to be able to assume control of it also. Thus there was developed that Trinity of Interests — Political, Military, Financial — working as a unit till the far-reaching plans of world wide domination compelled the united opposition of all peoples out of its immediate spheres of influence, though they only imperfectly realized the impending danger to themselves of the creed of this organized bureaucracy — viz., "Might is Right."

Must Protect Individualism

Constitutions afford protection to citizens insofar as the people who live under them see that the spirit in which they are conceived dominates the administration set up by them. It's the individual that must protect individualism or see it sink into the slough of misery concealed by the mirage of a promised millenium certain to follow when a benevolent and kindly government will wave its wand of plenty and contentment over all its dutiful subjects.

It is the attraction that such a picture of a perfect con-

dition of affairs has for so many minds that is the foundation for the belief herein expressed that if it could be shown beyond peradventure, that the turning over of the railroads to the government would mean better service at a less cost, that the price paid to obtain it would be too great. We cannot afford to lose our institutions for immediate gain, our birthright for a mess of pottage. Of course there are no facts to warrant the conclusion that the government could give as good service at the same cost as private operation, but the point here desired to emphasize is that if the service were better and the cost less, government operation would prove to be a disastrous policy for the reasons indicated.

Farm Monopoly

Specious arguments for the turning over to the government of the railroad and "natural resources" are familiar to all today. Soon you will hear the one for taking the land, and it will be something like this:

"Under present ownership the land is being wasted. See the crops that are being raised when government agents show the farmer willing to be taught how to increase the productivity of his land — ten to twenty times the average crops — now why let such an opportunity pass? Have the government take the land and place on it occupants who will follow instructions. Why let acres and acres of valuable soil continue to be improperly tilled, when it can readily be made to yield abundantly and thus reduce the cost of living to all humanity?"

This kind of prediction will find a most receptive mind in the great masses of people living elsewhere than upon the farms. Predictions of plenty would, of course, never be as nearly realized under government operation as they will be under private ownership and consequent individual initiative.

The claim is that once the country gets started on a policy of government ownership and operation in the domain of business, it will not stop it until the policy, unthinkingly adopted, has run its course and brought about its inevitable deadly results; and the road back will be a long, weary, toilsome and painful one for the generations which will be compelled to tread it to get back to a condition of freedom of individual action such as people of the United States have so long enjoyed as to complacently assume it cannot be taken away from them.

The only safe policy for the individual who values his liberty is to see to it that his government maintains a position

of umpire in the game of business, that it sees that the game is played according to rules, amended from time to time, from experience so as to provide equal opportunity and fair play for each player and group of players. It cannot take part itself in the game and do this. If it essays to umpire and play first base at the same time it will prove to be a dismal failure in both capacities.

TRANSPORTATION AND TRAFFIC PROBLEMS*

BY LUKE C. BRADLEY

The Transportation and Traffic Association is twelve years old. We meet today in its tenth annual convention. The conventions planned for the years 1917 and 1918 were abandoned because of the disturbed conditions produced by the World War. Hence we assemble today under conditions which represent almost a colossal change from those which obtained when, in Atlantic City, on the evening of October 12, 1916, our Association adjourned its last convention.

When you did me the honor of electing me President of the Transportation and Traffic Association, I assumed responsibility for the statement that given a good Executive Committee, we would put up a good convention. If that prediction falls short of accomplishment, it certainly will not be the fault of the men who have served on your Executive Committee. They have engaged most earnestly in the work of preparation for your convention. They have attended meetings at great sacrifice of time which they could ill afford to spare with so many matters at home pressing for attention, and at great expense, when most rigid economy seemed everywhere essential.

And in this connection I wish to express to you my warm appreciation of the energies and devotion of the members of the special committees which have studied and prepared reports on subjects to be presented for your consideration.

All of these men, busy with their own affairs, have faithfully responded to the call of their duty to our Association. They have made the sacrifices that duty entailed with a willingness and intelligence which merits the very highest appreciation. Their work, individually and collectively, is stamped with excellence. And I am sure that when the result is unfolded in your proceedings, you will feel, as I feel, a full measure of pride in those things which they have accomplished.

At former conventions it has largely been the rule to have presented for consideration a large number of subjects prepared by standing and special committees. These subjects were in addition to special papers on timely topics.

This year a radical change has been made from that prac-

*Annual address of the president of The Transportation and Traffic Association, at Atlantic City, October 6, 1919.

tice. It is proposed to present to this convention but four subjects. One of these subjects will be presented each day of the convention and that day will be devoted to its discussion.

The purpose of thus concentrating our efforts is to enable the convention to thoroughly discuss the reports, to digest them properly and to obtain an interchange of views from all sections of the country.

One of the great weaknesses of former conventions has been a lack of thoroughness in the handling of the important matters submitted. It is quite impracticable, during the brief period of one of our conventions, to give proper consideration to all live questions pertinent to our business. This is particularly true at this time when we are faced by so many pressing problems.

The Executive Committee, therefore, has selected four subjects which it considers should be brought as forcibly as may be possible to the attention of the convention. These subjects are:

1. Code of Traffic Principles
2. One-Man Car Operation
3. Collection and Registration of Fares
4. Proper Basis of Compensation for Use of City Tracks

The changes which have been brought about in the management and financial parts of our business, as a result of the World War, are varied and many. The big financial difficulties of the American street railways are known to all of us. The electric street railway has reached the lowest ebb of its history. Now we are at the forks of the road. As we go ahead it is to be determined what course is to be pursued. Either private capital will be taken out of the industry, which will be turned over to public ownership, or street railways will be continued under private ownership.

The permanency of street railway transportation, in some form, is unquestionable. That, from time to time, the art will be developed to cope successfully with every reasonable and just demand made upon it, is the confident belief of every one of us who has studied the conditions which now confront us.

In the train of a war which has disorganized, if it has not destroyed, economic order in a great part of the world, no doubt it is reasonable to expect many ideas and "isms" which are the outgrowth and offshoot of pre-war or post-war conditions in Europe, will find their way into this country. From

those countries, where there has been oppression and autocratic rule, these ideas, strange and out of keeping with free American principles of government, will continue to come to us. Municipal ownership is one of them. But municipal ownership is un-American. It is contrary to every principle of American government and has no place here.

The industry will continue under private ownership. The people will see the wisdom of this and will themselves demand it upon a basis which will provide adequate service and at the same time compensate the owners for the money, skill, initiative and labor required to produce that service. But the management of this great industry, upon which our urban population is so largely dependent in the pursuit of its daily avocations, will require and will receive even greater brains and energy in the future than has been devoted to it in the past.

I repeat, the street railway business in America has fallen to the lowest ebb it has reached since it emerged from disconnected chaos into a great national industry, and this is in spite of the fact that the executives of street railways have waged a fight to save the industry from that disaster, threatened constantly during the last few years, which excites the admiration of every man connected with this business. To be associated with such men fills one with a just pride. Their resourcefulness, their ability, their courage has been splendid. There is nothing in the annals of modern business to compare with the magnificent fight they have made and are now making. And for the reason that their cause is right, that it is just, that it is American, it is bound to win.

In defending the interests and prosecuting the rights of the street railways before the Federal government, State commissions and municipal authorities, the efforts of the executives have been pitched upon a high plane of business acumen and integrity, well calculated to command the respect and good will of every man capable of according fair treatment to others.

The very life of the industry has been at stake. It suffered through no fault it could either obviate or control. It has borne the burden of popular misinterpretation of its condition, physical, financial and as a citizen. It has been the victim of misunderstanding, to use no harsher term, that has tested both the courage and the ability of those who have so valiantly fought to save it.

Reference to executives means not only the officers of

the American Electric Railway Association, the Committee of One Hundred, who conducted so ably the presentation of the case of American street railways before the Federal Electric Railways Commission, but all those, throughout the country, who have, during the stress and storm and trials of the last few years, led in the splendid effort which has been made to avert a national disaster.

And yet there has been no bitterness. The discussions and efforts of these executives have been so free from bias, so earnest in purpose and so calm and dignified in judgment, as to excite the admiration of every man given the vision to see and the intelligence to comprehend the magnitude of the greatest industrial issue ever presented to the American people.

The saving of the street railway industry means not alone the salvage from threatened spoliation of billions of money invested, but it means the preservation to the people who use them constantly and essentially in the routine of their daily lives of the systems of urban transportation which have been evolved through the years of street railway operation.

But there is more to the street railway business than its financial side. Important as that is, of scarcely less importance is the duty devolving upon those into whose keeping is given the responsibility for its daily operation. Grateful acknowledgment is due to the comparatively large body of operating officials who not only have carried their own constantly increasing burdens with unfailing loyalty and tenacity, but also have shared in the anxious thoughts and fears for the future existence of the industry. It would be by no means surprising if continued, intimate contact with steadily rising costs, with increasing demands for service which could not be adequately met, and with overtaxed facilities which could not be fully maintained, should lead to gradual dulling of their energies and relaxation of the initiative and progressiveness which have characterized their normal service.

If such tendencies exist the time has come to check them, for energy, courage and hopefulness are needed as never before. The sustained, aggressive efforts of our executives before Federal, State and local authorities should inspire renewed faith and activity in operating officials. No possibilities of available facilities for service and efficiency should be overlooked. If operating problems, old and new, are attacked with renewed vigor and earnestness, the burdens of the executives

will be lightened and the solutions of their problems measurably simplified.

Co-ordination of effort all along the line is absolutely essential to the successful working out of the problems and difficulties which everywhere are present in the street railway industry.

It is not sufficient that we pursue those policies and methods which heretofore have been deemed adequate and sufficient. We are constantly confronted with problems new to us, and to meet them, and master them, it is necessary that we bring to bear the best that is in us. Nothing less will suffice. The stress of these times demands not only effort, but an elastic managerial policy, not only willing to welcome advancement in the art, but capable and resourceful in evolving improvements in practice and betterment in equipment.

New methods must be developed to meet new conditions and to successfully overcome new ordeals. Better ways and means of accomplishing the end we have set out to accomplish, certainly are essential to the life and salvation of the street railway business, as we know it, and it is squarely up to those of us, directly charged with operating responsibilities, to bring to bear upon the problems we encounter, all the genius and all the power at our command.

Efficiency, Service and Development should be the controlling trinity of all and each of us. If we are to measure up to the example set us along financial lines by the executives, we must do these things. And if we do, I unhesitatingly predict, with the utmost confidence in that judgment, a new era in street railway transportation.

The finished product of the street railway is — Service. Demands for service constantly are changing. New difficulties constantly are arising. New and strange requirements are being made upon the management. To meet these it is essential that there be exerted not only herculean efforts, but an intelligence backed by a courage that knows no fear, to develop and adopt those changes in method which will make possible the rendering of proper service.

Improvement in operating methods, and by this is meant detailed supervision of all parts of the companies' business, is essential to reach that standard required by new conditions with which we are now struggling.

Some parts of the business are being discussed at this convention by other of our affiliated associations. But within the

category of the Transportation and Traffic Association, I want to bring to your attention several important phases of management, some of which suggest the necessity of improvement in the art, and the importance of some of which is being more or less neglected or overlooked.

1. *Traffic Regulation*: Your Committee on "Code of Traffic Principles" will present to the convention a thorough and comprehensive study of this question. Street car service has gradually become the slowest of all forms of paid for transportation. To this condition there are many contributing causes. But the dominant one is street congestion. This is due to the rapid and enormous increase in the use of automobiles and the fast growth of American cities. A lack of uniform traffic laws and regulations, rigorously and impartially enforced, tends to place an insuperable handicap upon street car schedules.

2. *Skip Stops*: The skip stop system, inaugurated during the war as a fuel saving device, has demonstrated its value in increased speed in car schedules, time saving to the passenger and economy in operation. The efforts of the management of the industry throughout the whole country should be co-ordinated toward developing the skip stop, which certainly should be retained upon every street railway system in America.

3. *Safety Cars*: This subject will be presented to the convention in complete form. The four elements most essential to adequate street car transportation are Reliability, Speed, Comfort and Safety. Any development in the art of transportation which does not embody improvement in at least one of these elements is a step backward. The Safety Car combines not only one but all of them, and the industry has not yet fully comprehended its indebtedness to Mr. C. O. Birney whose skillful research and vision of future needs are embodied in its design. The possibilities of improved service, increased revenues and economies in operation which the Safety Car offers are so far-reaching that every electric railway official owes it to both the public and the railway which he serves to become fully informed upon every phase of its design and operation.

4. *Collection and Registration of Fares*: The report of your Committee on "Collection and Registration of Fares," I feel sure will be the subject of wide and varied discussion on the part of the convention. That, certainly, is one of the pressing problems of the day. It will be coupled with valuable data on fare boxes and prepayment cars.

5. *Current Saving Devices:* The experience of those companies throughout the country which have been foremost in the scientific and economical use of current, deserves careful study on the part of the industry.

6. *Traffic Checks:* There is nothing more necessary than a simple, complete and satisfactory system to record traffic conditions. Correct information as to traffic at all hours and upon all parts of a system, is a condition precedent to economical, adequate and proper service. Service is the finished product of our business. It is the friction point of contact with our patrons. A thorough knowledge of the service we are rendering and the demands for that service, is absolutely necessary to proper operation. Assuming that the riding public is willing to pay a fair charge for service, without such checks and proper records, based upon them, how can we know what we are giving and if that service is at once adequate without being too much or too little? In all other departments of operation, on a well regulated street car system, the management may have instant recourse to full information and accurate data. But it seldom is that conditions of traffic, which service is designed to meet, are so recorded as to be immediately available in determining the quantity and character of service best suited for the needs of those who use street cars.

7. *Supervisory Force:* One of the weaknesses in street car transportation in this country today is the lack of an intelligent and properly trained supervisory force. Co-operation between municipalities and street railway companies in traffic regulation and other matters which interfere with reliable car schedules, will be of little avail unless the supervisory force is well trained and fully competent. The development of an efficient personnel is a constant and tremendous task. But without it very little progress can be made toward improvement in the one thing in which the public is most interested — Service. Other departments engaged in supervision of street railway operation, in practically every case, are in the hands of a highly trained and intelligent personnel. Does the personnel of the supervisory force measure up to the standards of these departments? Certainly if efficient service is to be had the supervisory force must measure up to the highest possible standard. It is the direct point of contact with the public served, and service is the thing in which the public is most vitally interested. Whether a street railway undertakes to furnish a four-cent, five-cent, six-cent

or ten-cent service, it must be done with the same degree of efficiency and system as is employed in other phases of operation. The determination of the character and quantity of this service may not safely be delegated to those without authority and who are not fully advised as to the financial status of the company and all problems affecting our public relations.

8. *Employees' Welfare Work:* I would call your attention to the importance of this work along lines calculated to make service of employees as nearly 100 per cent efficient as circumstances will permit. Different companies have different methods of accomplishing this end and I will not undertake to refer to this subject in detail in this address. I do, however, recommend that your incoming Executive Committee consider this subject as one for presentation at your next convention.

9. *Transfers:* Because of lack of time the subject of transfers, in its several phases, is not being presented to this convention. It is, of course, a problem that is always with us and I recommend that the standing Committee on Transfers be continued and the subject presented to our next convention.

10. *Accidents:* I understand the Claims Association is presenting to its convention about every phase of the accident situation. Very little progress can be made by that Association without the fullest co-operation on the part of the Transportation and Traffic Association. The fast increase in automobile and vehicular traffic on our city streets is creating a situation which threatens to become very nearly as serious as the lack of adequate revenue. The passage and enforcement of adequate laws regulating traffic is absolutely vital. The subject of accidents is an integral part of the special report of your Committee on "Code of Traffic Principles" which is being presented to the convention.

ONE-MAN CAR OPERATION*

Your Committee feels, after its study of the subject, that the topic assigned to it represents the most important improvement in street railway operation that has been brought out in the last decade.

Our investigation indicates that the subject of one-man car operation naturally divides itself into two fundamentally different cases:

1. The mere rearrangement of existing two-man cars so that they can be operated by one man, thus saving platform expense, and, if equipped with safety devices, making an improvement in accident cost.

2. The creation of an entirely new type of car of low weight, greatly improved safety, and more rapid acceleration and deceleration. This car of the light weight safety type not only saves platform and accident expense, but permits an improvement in service, such as well nigh to revolutionize the street railway business.

The operation of street cars by one trainman in small communities where small gross per car-mile demanded the utmost economy in operating expenses, is not a new idea in the street railway business, the practice having been followed for years by many of the smaller companies; but the modern light safety car represents a radical improvement in the whole art of urban transportation and, therefore, will be the principal topic discussed in our report.

It is interesting to consider the evolution of the safety car. Some years ago, when a franchise providing a five-cent fare was considered an important asset of a street railway company heavy cars were deemed necessary for city service. It was felt that a heavy car rode more smoothly and would attract patronage correspondingly, so that car weights of 50,000 to 55,000 lbs. and even heavier were the rule rather than the exception for up-to-date city systems. These heavy cars required, of course, a corresponding investment in massive track construction to carry them and in power stations and sub-stations to move them, and a corresponding operating cost for track and

*Report of the Committee on One-Man Car Operation, presented to the Transportation and Traffic Association at Atlantic City, October 7, 1919, by C. W. Kellogg, chairman.

car maintenance and fuel to keep them in service. Troubles have come thick and fast since then. First the waning in popularity of the street car, due to the fast multiplying automobile (recent figures show that there are today in this country 75 automobiles for every street car), and second, five years ago, the jitney competition, followed, due to the war, by the sharp rise in prices of labor and material.

The jitney was what produced the Light Safety Car. The popularity of the jitney proved beyond a possibility of doubt that frequent, quick service would get passenger business away from the slow and infrequent street car, and it was up to the street railway industry to develop light cars that would simulate jitney service. Following this idea, Mr. Charles O. Birney designed the car that now bears his name. It was realized that the car must be light in order to accelerate quickly and that it must be operated with one man in order to compete with the jitney which was similarly manned. The safety devices followed from the realization that the public would not patronize the car unless it was convinced that it took no more chances in doing so than with the two-man car.

The design of the new car, weighing only 15,500 pounds and seating 32 people, had to be from the bottom up, — wheels, axles, truck, body and motors were all radical departures from previous practice and the automatic safety features alone were a triumph of adaptation to the compelling forces which led to the development of the new car. These safety devices consisted in general, of ways to make the operation safe in case the operator dropped dead, or slackened in attention. The "dead man's handle" required that the operator have his hand constantly on the controller or it would throw the power off. Similarly, if the power were so thrown off, the brakes were automatically applied and sand fed to the track, and, when the car came to a stop, the doors, previously held securely closed by air pressure, are made available for manual operation to form emergency exits if desired. All of these points will be clearly shown in the moving pictures that have been taken in connection with the Committee's report.

The Committee desires to emphasize the importance of the safety devices in one-man operation. We are advised that practically all of the cases of unfavorable action by the public or public bodies against one-man car operation have been where no safety devices were installed on the cars.

In order to support our own opinions with the largest possible reinforcement of opinions of those engaged in the business, questionnaires were sent out to all member companies. These questionnaires were prepared after a full Committee meeting and cover all phases of the subject. The companies replying numbered 93, representing 1,123 one-man cars. It was found, in general, that more than half of the companies reporting were 100 per cent one-man operated, and that 41 per cent of all cars of the reporting companies were one-man operated.

The total number of Light Safety Cars in operation in the United States at the present time, allowing for deliveries which will be made up to the time this report is presented, is 1,100. The number under order and in process of manufacture is 600,—among the latter an order for 200 for the Brooklyn Rapid Transit Company. The total number of one-man cars, including safety cars, in use in the United States, is somewhat over 2,000.

REPLIES TO QUESTIONNAIRES

Power Consumption

Companies using the Safety Car report an average reduction in energy consumption per car-mile of 51.2 per cent. Taking 3 kw. h. per car mile as a fair average for most city systems, this means a saving of about 1.5 kw. h. per car-mile. Actual figures from 45 companies show energy consumption of Safety Cars ranging from 0.8 to 1.75 kw. h. per car mile.

Trainmen

Replies showed that the operator of a one-man car was paid more than either trainman in two-car operation by 62.5 per cent of the companies answering the question, the range being as follows:

Number of Companies	Cents per Hour Additional
1.....	1
10.....	2
5.....	3
13.....	4
1.....	4½
10.....	5
1.....	7
1.....	8
1.....	7½
1.....	10
Average.....	4

As to the feeling of the trainmen toward one-man cars the replies showed:

Favorable.....	83
Unfavorable.....	10
Per cent favorable.....	89.2%

The same ratio was reported as to opposition by trainmen to the inaugurating of one-man car operation, the opposition being classified as 7, due to labor union feeling, and 3 due to apprehensions of the men as to the difficulty of accounting. Only 2 companies out of 45 report the trainmen disliking the Safety Cars.

In answer to the question as to whether or not trainmen had been assured they would not lose their jobs due to the starting of one-man operation, 39 companies reported that they had made this promise, 42 that they had not.

The Public

The attitude of the public toward one-man cars when started was reported as friendly by 84 and unfriendly by 15. This latter number was changed to 4 after a trial of the cars themselves, thus resulting in a final public verdict of 96 per cent in favor of the one-man cars.

The action reported by public bodies toward one-man cars was as follows:

Cases of favorable action by city commissions.....	10
Cases of favorable action by State Utility Commissions ...	11
Instances of defeat of proposed unfavorable state laws. ...	3
Refusal of city council to pass prohibitory bill introduced by labor.....	1

Only two unfavorable acts by public bodies were reported, one by a district court and one by a city commission, but in these cases, the Safety Car was not at issue.

Regarding the question of fare collection with one-man cars, replies showed no difficulty or not any change from conditions with two men in 88 cases, and the 3 companies reporting difficulty said it was only to a limited degree.

Schedules

The replies to the questions under this heading had to be clearly distinguished as between light weight Safety Cars and converted one-man cars, because the latter could not, of course, expect to effect any change from their former schedule.

Regarding headway, the average increase in number of cars operated on lines using Safety Cars was 43.7 per cent.

Similarly, with schedule speed, this was increased an average of 14.76 per cent with the Safety Cars, thus making an average increase in car frequency of 58.46 per cent.

As to lay-over time, more was found needed by 12 companies, but no additional needed by 75 companies.

As indicating the wide range of adaptability of Safety Cars, headways from one (1) minute to thirty (30) minutes were reported.

Earnings

The wonderful success of the Safety Car in building up traffic was indicated by the answers to these questions. Of course, with converted former two-man cars, no effect in increased earnings was observable. The average for the six companies using Safety Cars which were the most successful shows the following:

Gross per car mile before one-man car operation.....	21.11c
Gross per car mile after one-man car operation.....	20.65c
Decrease in car-mile gross.....	2.3%
Increase in car-miles operated.....	53.4%
Increase in total gross earnings.....	51.1%

In one city of 125,000 population, an increase of 79 per cent in car mileage on lines where the Safety Cars were operated produced an increase of 71.2 per cent in total gross earnings from the lines in question.

The replies as to the effect of Light Safety Cars in eliminating jitney competition do not make a very impressive showing statistically, partly, however, because in a large proportion of the companies reporting no such competition existed, but nine companies report complete and two companies partial elimination of this competition through the use of Safety Cars.

Operating Features

Various degrees of accident reduction were reported by 47 companies and no such effect noticed by 22. It is significant to observe in this connection, that the number of companies operating one-man cars without any safety devices is 24.

On car maintenance, the replies were necessarily inconclusive, due to the comparatively brief time the Safety Cars have been in operation, but six companies report a reduction of 50 per cent in car mile maintenance cost with Safety Cars and others predict various savings in future. Naturally no

saving in car maintenance can be secured where the former two-man car was simply rearranged for one-man operation.

A saving in the cost of track maintenance was predicted by 52 companies. Two large systems advise that they propose a reduction of 20 per cent to 30 per cent in rail weight if Safety Cars are standardized on in the future.

The acceleration of Safety Cars in miles per hour per second as compared to the average car on the system showed:

Average car	1.67
Safety Car	2.53

Regarding flagging railroad crossings, the consensus of opinion appears to be that greater safety is obtained where the responsibility rests on one operator than where, as is the usual practice, it is in effect divided between two trainmen, with the proviso, however, that where the view from the car is obstructed, a flagman is desirable.

Distribution

That the application of Safety Cars is not to be restricted to unimportant operation,—light traffic lines, etc., is shown by the following table indicating the use of such cars based upon the population of respective cities.

Population	One-Man Cars	Safety Cars
25,000	272	27
25,000 to 75,000	422	178
75,000 to 150,000	367	167
Over 150,000	96	59

Conclusions

The answers to the general question of whether the experience with one-man car operation would lead the company to favor the extension of its use, show the following striking results:

Extension favored by	76
Extension not favored by	2

What Safety Cars Can Show

In order to indicate clearly the effect to be expected, from the results *already actually obtained* by street railway companies, from the use of Safety Cars, the following typical example has been worked out:

Present Conditions:	
Length of route, miles	4
Average speed, miles per hour	8
Cars operated	6
Headway, minutes	10
Gross per car mile (5c fare)	25c

Conditions with Safety Cars:

Average speed, miles per hour.....	9
Cars operated.....	9
Headway, minutes.....	6
Increase in car miles, per cent.....	66½
Gross per car mile, cents.....	24

The Safety Cars can be purchased on the basis of 25 per cent cash and the balance in equal monthly instalments with interest at 7 per cent on deferred payments covering a period of five years. The average annual charge then becomes:

One-fifth of purchase of \$6,000.....	\$1,200
Interest (average per year).....	170

Average per year for 5 years.....	\$1,370
-----------------------------------	---------

The showing then becomes as follows:

Earnings:

Present 315,210 car miles per year @ 25c.....	\$78,802.50
Future 525,350 car miles per year @ 24c.....	126,084.00
Increase in gross earnings.....	47,281.50

Expenses affected by changes:

Annual cost of cars — 9 @ \$1,370.....	\$12,330
--	----------

Power:

Present: 315,210 x 3 = 945,630 kw. h.
Future: 525,350 x 1.5 = 788,025 kw. h.
Saving: 157,605 kw. h.
At 0.8c for fuel = \$1,260.84

Trainmen's Wages:

Present: 12 — 18 hour men @ 45c.....	\$97.20
Future: 9 — 18 hour men @ 50c.....	81.00

Daily saving.....	\$16.20
-------------------	---------

Per year, 365 x 16.20 = \$5,913.00

Accidents:

Present: 5% of \$78,792.50.....	\$3,939.63
Future: 2½% of \$126,084.....	3,152.10

Saving.....	\$787.53
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Car Maintenance:

Present: 3c x 315,210 C. M.....	\$9,456.30
Future: 2.1 x 525,350 C. M.....	11,032.35

Increase.....	\$1,576.05
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Total increase in operating expenses.....	\$5,944.68
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Results

Increase in annual net earnings from the use of
Safety Cars on the line..... \$41,336.82

This result is secured:

1. While paying out of operating expense the investment in new cars to do the work.
2. While giving the patrons of the line $66\frac{2}{3}$ per cent increased car frequency and $12\frac{1}{2}$ per cent increased speed.
3. Without any allowance for the saving in track maintenance from operating a 15,500 lb. car as against a 35,000 lb. car.
4. While *increasing* the *net* earnings per mile of track per year for the line (estimated as double tracked) by \$4,580 or 6 per cent on a track valuation of \$76,500 per mile of single track.

CONCLUSIONS AND RECOMMENDATIONS

We beg to summarize below our findings on the subject assigned to us for study:

1. The Safety Car is one of the most important improvements in street railway service that has appeared for many years. Its valuable features in the order of their importance are:
 - (a) Greatly improved service to the public, both as to frequency and safety.
 - (b) Increased earnings for the company.
 - (c) Decreased operating expenses.
2. One-man operation alone, while useful in saving platform expense in the smaller communities, is not comparable with the improved service that can be obtained with the Light Weight Safety Car with its more frequent headway and greater average speed.
3. The savings obtainable from one-man cars should be shared with the trainmen in the form of a higher hourly rate for the operators of such cars than is paid to the trainmen on two-man cars.
4. When inaugurating one-man car service, it is good policy to assure the trainmen that no one will lose his job due to putting in the new cars. They are installed, as a rule, a line at a time, and experience has proved that the company is not burdened with extra men through this policy.
5. From the nature of the traffic available, the Safety Cars can accomplish more in a larger city than in a small one, for the reason that the possibilities of increasing riding in the

small community are limited. This statement is made to correct the erroneous impression existing in some minds that the Safety Car is useful only for saving expense in the smaller cities.

6. Where traffic is believed to be too heavy on peak to be successfully handled by Safety Cars, the larger, heavy cars may be used for tripper service on peak, thus making the light cars handle the long hour runs.

7. Similarly, where snow storms require the use of the heavier equipment at rare intervals, the Safety Cars can still be used to advantage during other times.

8. The Safety Car, though light, is just as substantial and with the same care in maintenance should last just as long as the former types of car. It has a steel frame and thoroughly modern, ventilated, interpole motors.

9. Regarding the matter of standardization, your Committee was not unanimous, but the majority opinion favored adhering to the present standard design of the Safety Car in the interest of cheaper costs through quantity production.

10. Experience has shown that the overwhelming majority of both riding public and trainmen favor the One-Man Safety Car; that it can, at one and the same time, improve the public's service, increase the trainman's wages and raise the company's profits; that it can be purchased without financing and operated for about half the cost of an ordinary car; and that most of the companies that have tried it want more. We predict an increasingly rapid extension of the use of a device that can make a showing like the above.

DATA REGARDING BIRNEY CARS

Length over all.....	28' — 0½"
Length of body (corner posts).....	17' — 9½"
Width over all.....	8' — 0"
Height from rail to top of roof.....	9' — 9½"
Seat spacing.....	2' — 4½"
Aisle width.....	1' — 10"
Seating capacity.....	32
Wheel base.....	8' — 0"
Wheel diameter.....	24"
Motors.....	2-25 H. P.
Total weight of car.....	15,500 lbs.

GUNITING PILING

BY HARRY B. SEWALL

The accompanying photographs were taken during the work of guniting the piling of the waterfront trestle on the Bellingham Division of the Puget Sound Traction, Light and Power Company. One picture, Fig. 1 (see frontispiece of the magazine), gives a very good idea of the three-car train as it was assembled.

The first flat car contains, first, the bin for the sand and compartment for the sacks of cement; then the boxed-in motor for the mixer; further on the cement gun itself. The second car contains the motor-driven air compressor and fresh water reservoir and water pressure tank.

Another picture of the train, Fig. 2, gives the side view and shows the method of application and the soft rubber hose connection.

It takes about eight men to handle the outfit, including the motorman and conductor of the train. The motorman handles the sand and the conductor operates the cement gun. Two men are needed to place the sand and cement in the mixer, with one part of cement and three parts of sand, and one man takes the mixture away from the mixer and places it in the gun, one man being used to operate the gun itself. One other man is needed to look out for the machinery and as a helper. On account of the condition of the bed of the Sound, which oftentimes is from one to two feet deep, three men are needed on the ground to handle the hose and nozzle.

The nozzle itself is not difficult to handle, except that it is very tiresome work and is it necessary to change nozzle men frequently.

The mixture is placed in the upper cylinder of the gun, the valve closed, air let into the cylinder valve open to the lower cylinder, and the mixture drops into this cylinder by gravity, the valve again being closed, and it is then fed into the hose at 28 pounds pressure by a small air motor.

It is interesting to know that the hose is made with a soft rubber lining and will expand, but shows no erosion from the sharp sand which is forced through in dry form. The other hose carries the water to the nozzle at a pressure of 38 pounds and

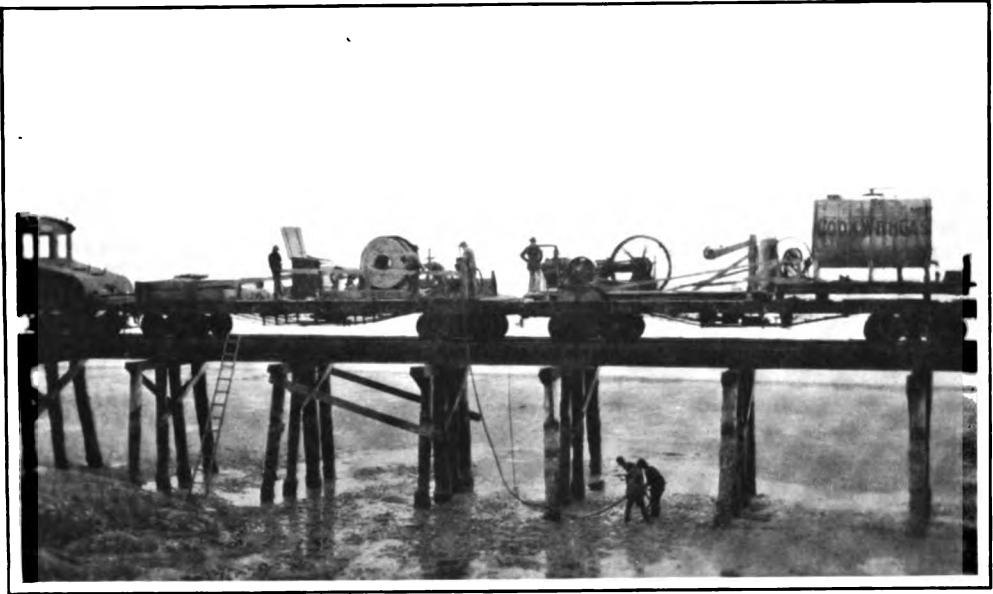


FIG. 2. BIRD'S EYE VIEW OF CEMENT GUN IN OPERATION



FIG. 3. WORK OF CONCRETING A BASE AROUND PILING DONE IN 1915

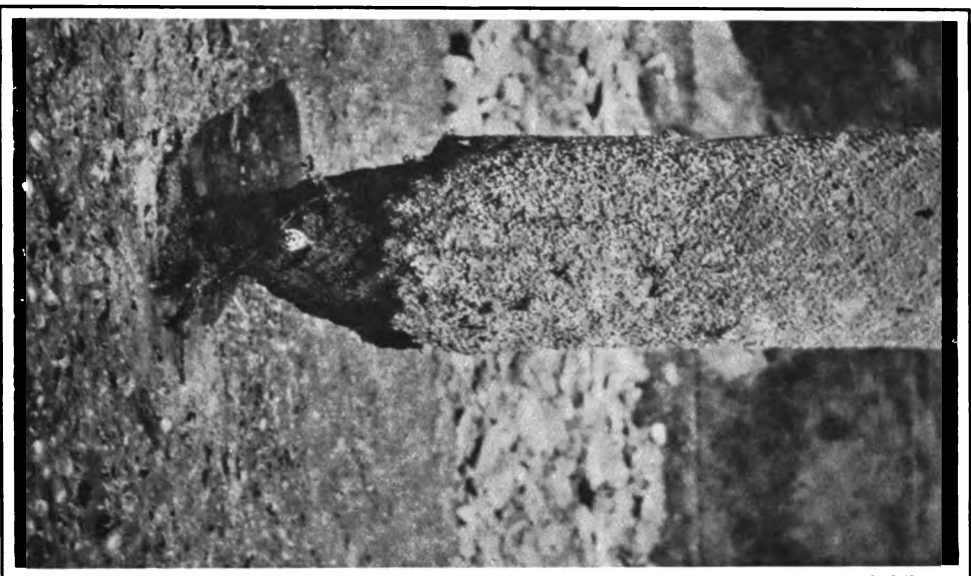


FIG. 4. WHAT THE POLES WOULD HAVE LOOKED LIKE HAD NO WORK BEEN DONE ON THEM

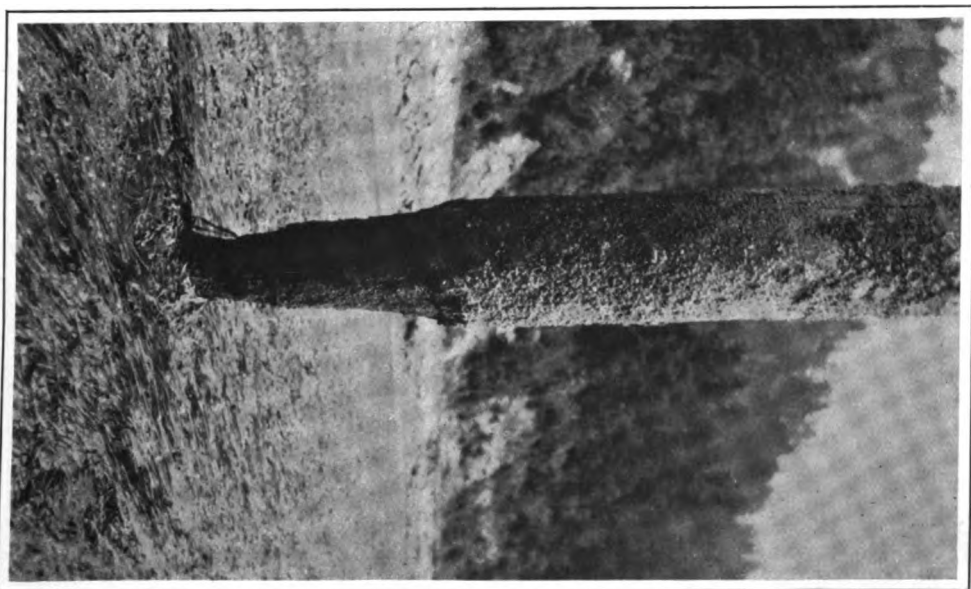


FIG. 5. DESPERATE WORK OF THE LIMNORIA
This pile was driven in 1911 for testing purposes.

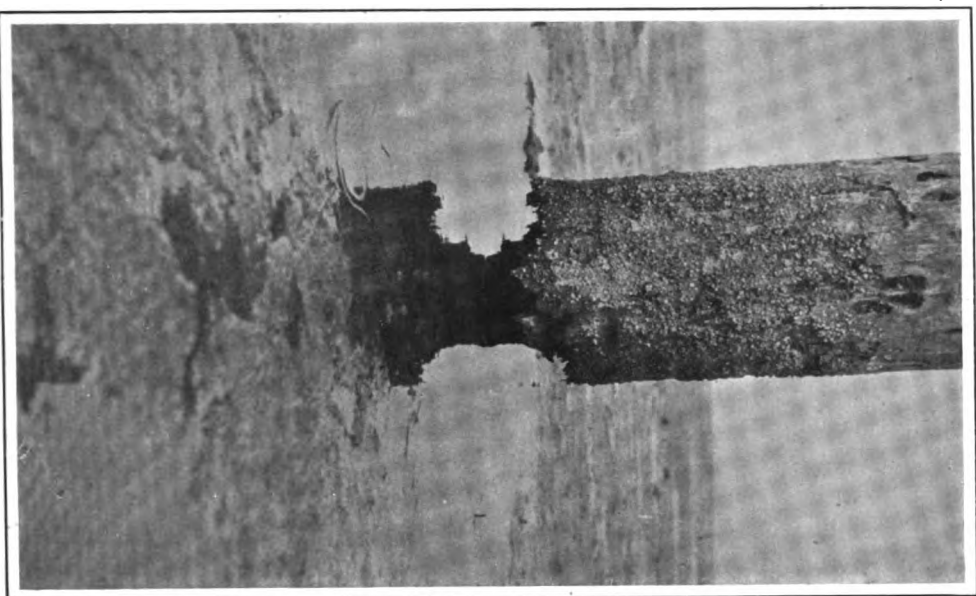


FIG. 6. A TEST PILE DRIVEN IN 1911

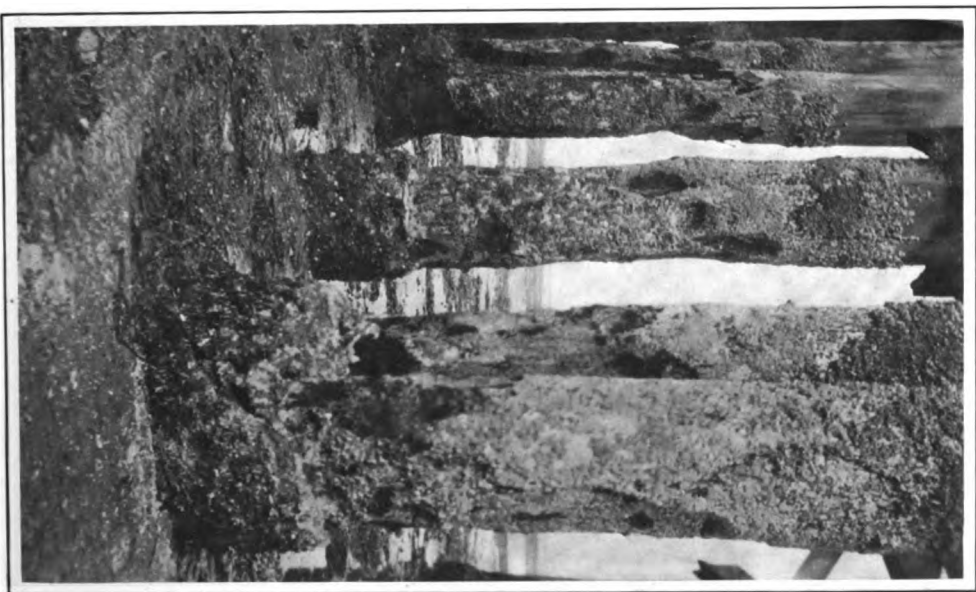


FIG. 7. BEFORE TREATING WITH GUNITE

the two are mixed at the nozzle. The theory is that the cement and sand mixture strikes the pile first and is driven in under pressure, and as the other particles of cement and sand are forced on top of this, driven in further with a certain rebounding action of the sand, which loses about 25% of it; none of the cement, however, being wasted, and leaving the mixture approximately 1—2 on the piling. The mixture can be brought up very rapidly, and it is claimed by the makers that a flat surface 7' x 10' can be covered by two inches of cement in an hour. In using it in this way it is advisable to use some sort of reinforcing, such as metal lathe or chicken wire.

One of the pictures, Fig. 3, shows the work of concreting around the base in 1915, and while the greater part of this work has stood, some of it had broken away or deteriorated and had to be replaced. However, the difficulty with the work done in 1915 was not so much its permanency, but was in the fact that the Limnoria works higher up, or to the high water mark, and therefore would have necessitated similar reinforcing to a point immediately above this mark if permanent protection was to be had. This would naturally have been very expensive.

There are three pictures, Figs. 4, 5 and 6, showing the different condition of the test piling and giving a very good idea of what condition the trestle would have been in had no work been done in 1915 and later, for protection against this little enemy. Some of the other pictures, Figs. 7, 8 and 9, show the piling before the gunite has been applied and the chicken wire reinforcement, and pictures Figs. 10 and 11 give a very fair representation of one of the worst piles before and after treating.

Considerable work was done on the piling the early part of the season by adzing off the portion attacked by the Limnoria, with the expectation of painting with cement mixed 1—1 with the use of a brush. This was tried last year and was fairly satisfactory, although some of this very thin coating cracked off, probably due to the fact that it was not imbedded in the pile the same as is the case with the present operation.

In guniting the piles this time we have put on the material varying in thickness from a heavy coat of paint to eight inches, depending upon the condition of the pile itself. Where there were any large holes in the piling which had been eaten out by the Limnoria, chicken wire reinforcement was tacked on and the piling brought up to its original size. All piling has also

been treated to a point just above the high water mark, or as high as the piling has been affected (see Fig. 12).

So far the work appears to be permanent after having set for about seven days, and it is almost impossible to break off the thinnest concrete coat with a hammer, and then only after continuous pounding. We might mention that this gunite is absolutely impervious to water and differs from concrete in density, every void having been filled.

The work that we have done has been necessarily slow, on account of the condition of the tides and the necessity of clearing passenger and freight trains. Had we known of this method of treating piling we should not have expended any money during the early part of the season in adzing the piling, as the action of this mixture under high pressure on the affected piling kills all of the Limnoria, and if anything, adds to the permanency of the coating by the honey-combed condition of the piling.

The length of time necessary to treat each pile varies very considerably on account of the length and condition of the piles. The best record was the treating of 72 piles in 75 minutes, although these were the shorter piling and least affected. Figs. 13, 14 and 15 show in detail the original condition of some of the piles and also show the piling at different stages of the treatment.

The piling that is in the worst condition is the longer piling between Clayton Bay and Dog Fish Point, and as we have no siding at Clayton Bay, the work of treating these long piling is very slow, only approximately two dozen piles per day being treated, on account of the condition of the tide.

While we expect that some work will necessarily have to be done next year, as we hardly believe it is possible that all of the guniting will stay on, it should be a comparatively simple matter to gunite the small portions that may be affected. The season when the work can be done to the best advantage is during the low tide.

If this work which we have done this year proves as successful as we think it will, every dollar spent will be worth many dollars to the company, and the life of the trestle will be increased from 400 to 500 per cent, and possibly more than that.

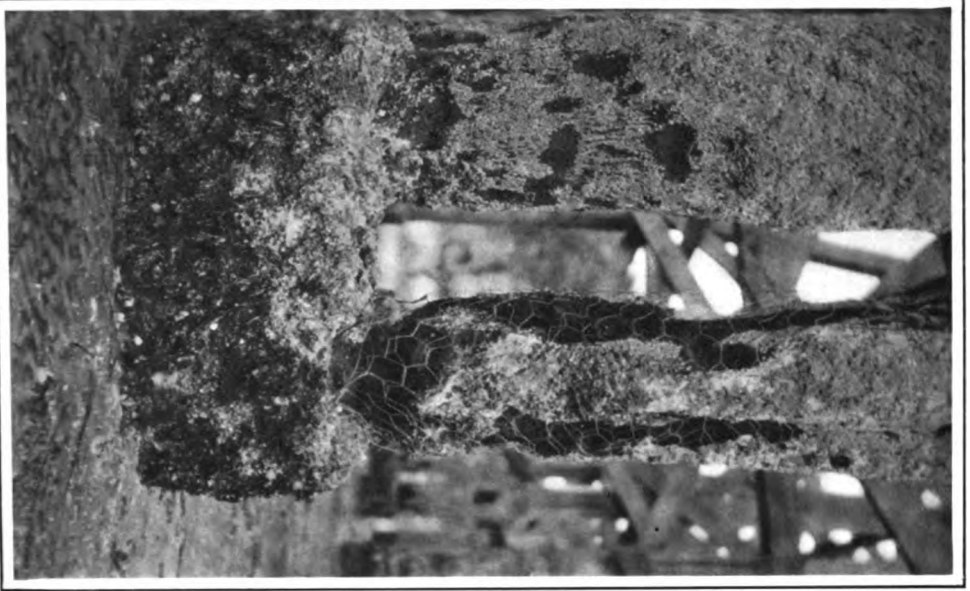


FIG. 8. REINFORCED, READY FOR BUILDING UP PROCESS



FIG. 9. PILES BEFORE TREATING
Network was put on to reinforce Gunite before treating.

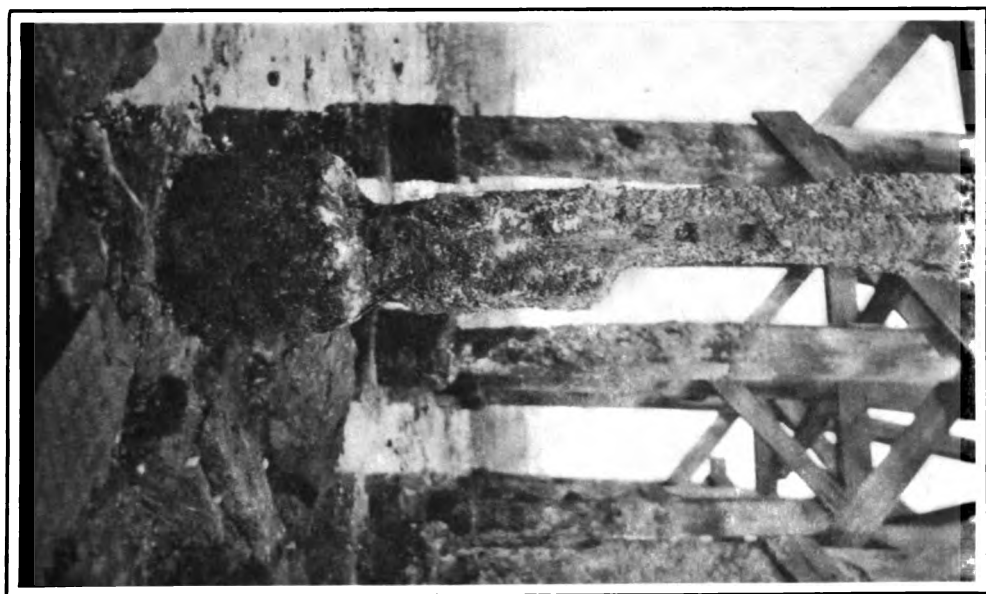


FIG. 10. BEFORE TREATING



FIG. 11. AFTER TREATING

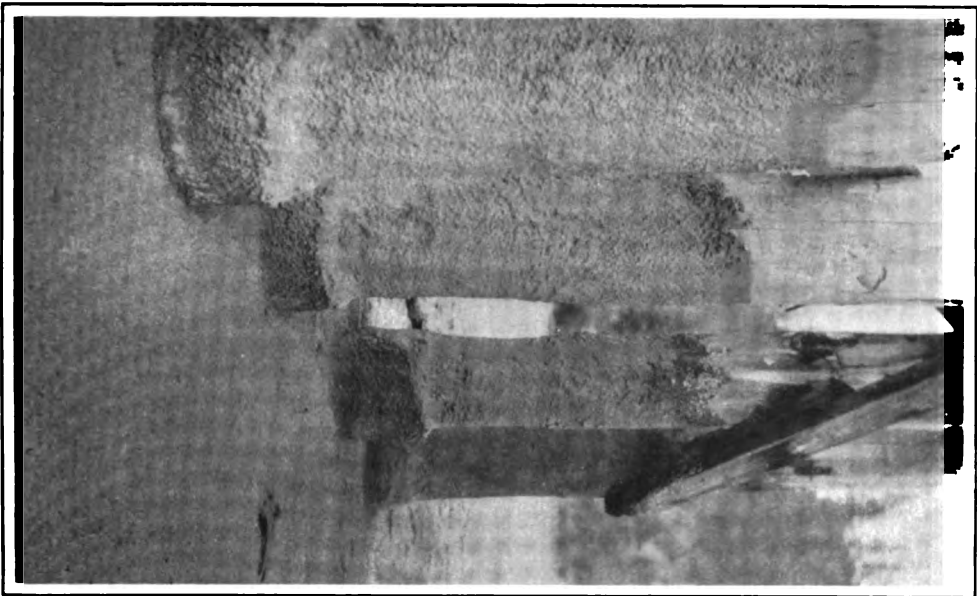


FIG. 14. AFTER BEING TREATED WITH GUNITE
The two centre piles were only five inches in diameter. They were reinforced with 8-inch mesh chicken wire and built up to practically their original size. Part of this coat of gunite is 6 inches thick.



FIG. 15. NOZZLE OF CEMENT GUN IN OPERATION



FIG. 14. APPLYING GUNITE



FIG. 15. COATING PILES WITH GUNITE

TRAINMEN'S LUNCH ROOMS IN THE TEXAS DISTRICT

BY J. F. McLAUGHLIN

The main car barns of the El Paso Electric Railway Company, the Northern Texas Traction Company and the Houston Electric Company are situated on the outskirts of their respective cities, far removed from restaurants where good wholesome food can be obtained.

In the vicinity of each of the car barns there grew up in the past a number of small restaurants catering expecially to the trade of trainmen. These restaurants were very dirty and unsanitary in appearance, and the food, poorly cooked, indigestible and unwholesome, was sold at high prices. These so-called "hash-houses" were rather liberally patronized by the night and early morning trainmen, chiefly because of their convenience.

In the early part of the year 1918 it was noticed at Fort Worth that a considerable number of men who were eating at these restaurants were frequently off duty on account of sickness, and investigation in all three cities developed a number of cases of ptomaine poison and many cases of digestive disorders, which were directly traced to the poor food received at these restaurants. In El Paso it was found that the hot Mexican dish, "chili con carne," which had been poorly prepared, had made quite a ravage on the health of the trainmen.

The company managers, realizing that the efficiency and health of the trainmen was being impaired, after several attempts to improve the sanitary conditions and quality of food served by these "hash-houses," decided to open, as an experiment, lunch rooms in their car barns or in the Trainmen's Club Rooms near-by. The company officials had in mind, by so doing, they could provide, for the convenience of their trainmen, plain, wholesome food well cooked at reasonable prices, and anticipated that this would result in improved efficiency of their men, as the company officials were in entire sympathy with a remark that a famous general once made, that "an army marched on its stomach."

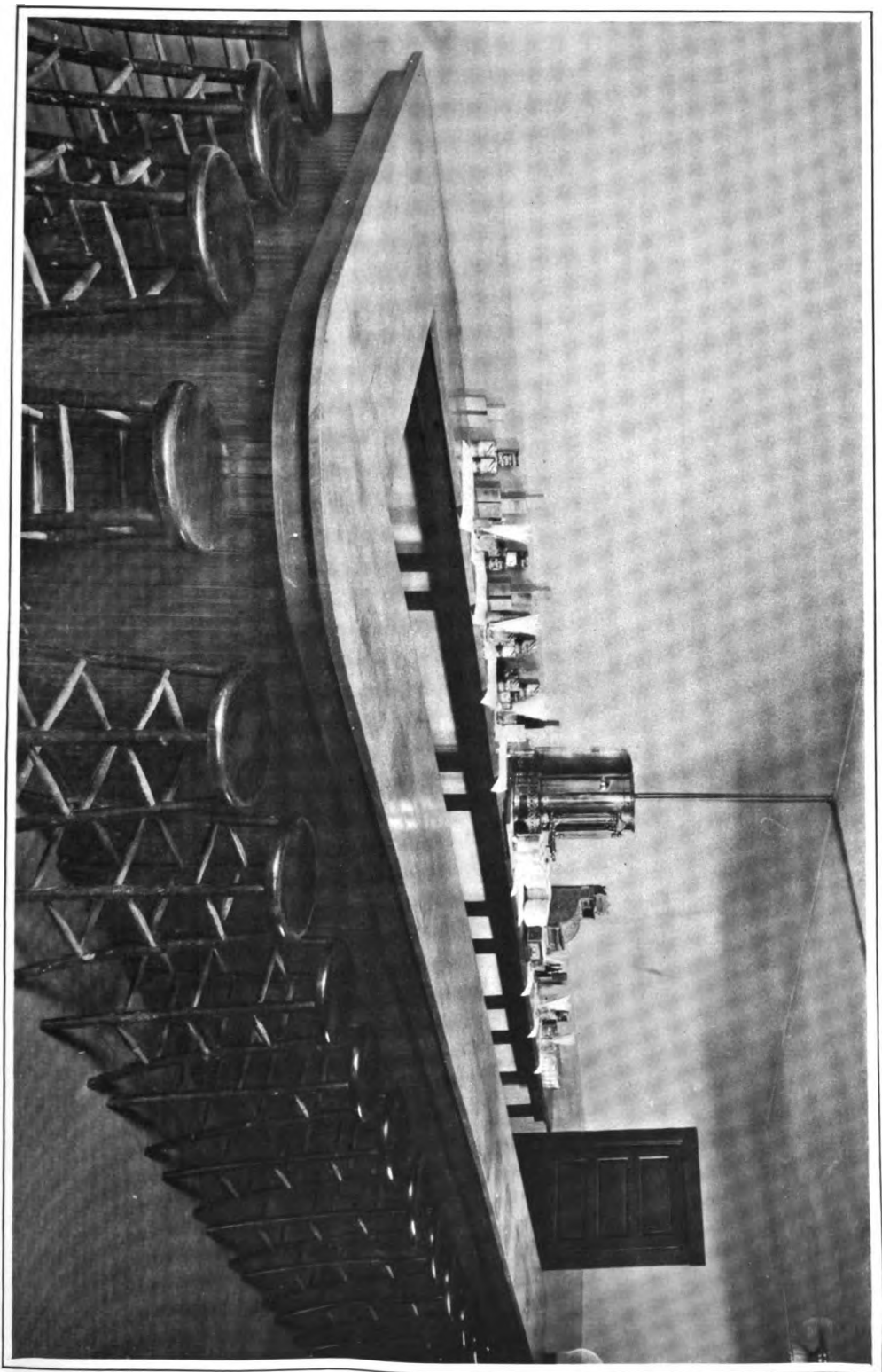
These lunch rooms were inaugurated at approximately the same time in all three cities. They were not intended to serve regular meals or to operate as restaurants, but primarily

to take care of the wants of the night and early morning trainmen and operate in all three cities only from 7.00 P.M. to 7.00 A.M. Most of the trainmen eat all the meals they can at home and prefer to do so; others on runs throughout the day patronize restaurants in the down-town districts where good food can be obtained. Supper or lunch for the night men and breakfast for the day men was the important thing. The all-night lunch room adequately meets this requirement, and is not only appreciated by the men themselves but also by the wives of the married men. Prior to this installation, a night man was confronted with the choice of a long ride up town and back if he was to get a warm supper; a mighty poor one at one of the adjoining "hash-houses" or a cold bite at home. The day man must get his breakfast at one of the "hash-houses," or if he happened to live at home, his wife must get up at four o'clock in the morning to prepare it for him. The trainmen's lunch room has effectively remedied this condition, and everyone concerned looks upon it most favorably. The bill of fare is simple, consisting of wholesome, nutritious food requiring no special preparation; and orders are served expeditiously with a minimum amount of labor. Below is a bill of fare for the month of August for the Houston lunch room, which is typical:

Ham and Eggs.....	30c
Ham and egg sandwich.....	15c
Two eggs.....	15c
Hot cakes and maple syrup.....	15c
Post toasties and grape nuts.....	15c
Post toasties.....	10c
Corn flakes.....	10c
Ham sandwich.....	10c
Cheese sandwich.....	10c
Egg sandwich.....	10c
Pie, per cut.....	5c
Coffee.....	5c
Milk.....	5c

The lunch rooms are run on a cost basis and prices are changed from month to month only as is necessary to meet expenses of operation, which consists chiefly of the cost of food-stuffs; cooking and refrigeration equipment; labor of cooks and helpers; and small miscellaneous expenses. No rent is charged for the space occupied, neither does the lunch room pay for water, gas or electricity, these items being furnished free by the company.

No cash is accepted at the counter in payment of lunches.



RESTAURANT, EL PASO TRAINMEN'S CLUB HOUSE

Tickets are sold by the night cashier on duty to receive turn-ins, in a room adjoining the lunch room; and he is working all hours that the counter is open.

It is desired to emphasize the fact that in taking care of the wants of their men, the companies operate lunch rooms and not restaurants; as to accomplish the latter it would mean regular meals and operation twenty-four hours a day at an appreciably increased over-head cost. While there has been some demand for restaurant operation, it is not specially desired by the majority of the men, and the simple menu has been found satisfactory from every standpoint.

That the lunch room has been a distinct success is shown by the liberal patronage by the trainmen and the favorable comments that have been made from time to time by trainmen, saying that their wives were especially pleased because they were assured that their men would get a good breakfast without their having to get up at such an early hour in the morning to prepare it, and that this also eliminated the necessity of keeping suppers warm at night.

To make its men 100 per cent efficient has been the controlling motive in the establishment of the lunch rooms on the part of the company, firmly believing that by making a man more efficient they were providing him with an asset invaluable in these days of transportation difficulties. That the company has been successful in the accomplishment of its object has been apparent in a great many cases; and the trainmen's lunch room, begun chiefly as an experiment, has become a permanent institution whose success has been assured because of the mutual advantages accruing to the company and its trainmen.

BUSINESS CONDITIONS IN STONE & WEBSTER LOCALITIES

The managers of the companies operated by Stone & Webster write to the Management Division of Stone & Webster about the first of each month with reference to business conditions in their respective localities during the preceding month. A digest of these letters is published each month in the Stone & Webster Journal.

Baton Rouge, La., September 12th:

Building permits for August, 1919, were valued at \$68,974, against \$16,956 last year.

The average number of employees at the Standard Oil Company in August, 1919, was 2,850, against 2,248 last year.

General business conditions have been very good and every indication is they will continue so. New bungalows are being built all over the city, and there is still a great shortage of houses. Contractors have all the work they can do, and at the present time are experiencing more or less difficulty in securing skilled labor. A great many of the workmen of the Standard Oil Company's plant are still working a great deal overtime.

The railway, light and power and gas receipts of the Baton Rouge Electric Company for August, 1919, all show noteworthy increase over last year. The railway receipts represent the largest in the history of the Company.

Beaumont and Port Arthur, Texas, September 16th:

Bank clearings at Beaumont for August, 1919, were \$4,703,065, against \$5,434,897 last year, the decrease being ascribed to the consolidation of the Gulf and First National Banks.

During August, 1919, 88 building permits were issued at Beaumont, valued at \$56,913, against 72 last year, valued at \$72,085 and 19 at Port Arthur, valued at \$22,980, against 17 last year, valued at \$90,120.

It is generally expected that business conditions will remain active and prosperous for several months to come. The crops are promising, particularly rice, which is selling at a very high price. Wholesale houses report continued good business and retailers generally are having good trade.

The rainfall for August was just about equal to the seasonal average. With normal conditions continuing for the next few months, excellent crops should be gathered in this territory.

A new flour mill is under construction in Beaumont and should be in operation in a few months. The power will be furnished by the Eastern Texas Electric Company.

Our lighting receipts for August, 1919, show an increase of 25% over last year, and the railway receipts an increase of 28%.

Bellingham, Wash., September 15th:

Building permits at Bellingham for August, 1919, were valued at \$102,100, against \$4,350 last year.

Post office receipts at Bellingham for August, 1919, were \$6,454, against \$6,120 last year.

Even with the large number of men out of employment on account of the strike at the local lumber mills, business conditions among the merchants have continued good. No great falling off in trade has yet been noticed, which is probably due to the general prosperity of the community, the crops in the surrounding territory having been better than normal, with prices unusually high. Unless the car shortage, which is rather serious at the present moment, affects the lumber shipments, there will be no reason to expect any change in general business conditions. The mills are gaining every day in the number of employees, and will soon be back to normal running conditions.

The canneries have had a bad season, the fish run being only about 40% of normal. This is true both of the Puget Sound district and the Alaska territory.

Even at high prices building is going on rapidly. Even though the carpenters and painters are boycotting the local lumber mills, building does not seem to have been curtailed at all, and lumber is being delivered from the local yards as usual.

The pleasant weather during the past month has afforded the farmers an opportunity to harvest their crops, and the grain crops especially have had a very heavy yield.

The receipts of our city lines show an increase of 16% over last year. Passenger receipts on the interurban have exceeded expectations, due largely to the prosperity in Skagit County.

Brockton, Mass., September 12th:

Bank clearings for August, 1919, were \$18,526,137, against \$13,627,547 last year.

Bank deposits in August, 1919, were \$16,843,836, against \$14,670,032 last year.

During August, 1919, 25 building permits were issued, valued at \$45,885, against 26 last year, valued at \$44,505.

Shoe shipments for the month of August, 1919, totaled 52,279 cases, averaging well with preceding months this year, and considerably in excess of August last year. The total for the eight months of this year is 501,477 cases, against 430,353 cases last year.

Labor troubles have been numerous the past month, although not very serious.

The T. D. Barry Company is at present at work on a \$150,000 addition to its Court Street factory. The Pleasant Street factory has been sold to a new corporation, which plans to make 1,500 pairs of shoes daily.

The Liberty Shoe Company, a new concern here, has started on the erection of a five-story plant on Court Street. It is expected that the building will be completed in about seven months.

The shoe salesmen are starting out on their fall trips, and all anticipate an unusually good season.

Columbus, Ga., September 19th:

Bank clearings for August, 1919, were \$3,445,718, against \$2,682,536 last year.

During August, 1919, 10 building permits were issued, valued at \$32,500, against none last year.

Post office receipts for August, 1919, were \$9,057, against \$9,454 last year.

The general business outlook in Columbus is very encouraging. Retailers are having all the trade they can possibly handle. The farmers have more ready cash than ever before, and the prospects are for a good cotton crop at a high price the coming year.

Cotton mills have orders for their output up through the spring months of 1920, and have sold on a basis of 30c cotton or even higher. Jobbers are now competing for the product at any price.

Both the railway and the light and power receipts of the Columbus Railroad Company for August, 1919, show a handsome increase over last year.

The same is true of the receipts of the Gas Light Company of Columbus for August, 1919, as well as for the receipts of the first eight months of 1919.

El Paso, Texas, September 4th:

Bank clearings for August, 1919, were \$23,843,875, against \$20,894,-249 last year.

During August, 1919, 73 building permits were issued, valued at \$72,866, against 67 last year, valued at \$39,135.

The scarcity of apartments and houses for rent indicates that El Paso is filling up again. Labor conditions are not so unsettled here as in other places, and there seems to be no reason why business should not continue as good as at present.

As above stated, rent houses are very scarce and home dealing continues to hold the lead. Business property values continue at their former high market. The building of bungalows in Manhattan Heights goes on, and purchasers are coming forward for the completed ones.

The building at Fort Bliss is going forward nicely, and the largest United States Ordnance Depot will be there also. Seven steel warehouses, 240 x 500 feet, are to be erected, in addition to six storehouses and nine magazines now at the Fort.

Our railway receipts for August, 1919, show an increase of 43% over 1918. The light and power department made a substantial gain in meters during the month.

Everett, Wash., September 9th:

During August, 1919, 92 building permits were issued, valued at \$59,030, against 63 last year, valued at \$117,166. It is interesting to note that 14 of the permits this year were for garages and woodsheds, and 65 were for repairs and alterations. The estimated value of new buildings for which permits were taken out was \$48,885.

There has been no appreciable change in prices for lumber and shingles. In the words of one of the manufacturers, there are orders galore, but no cars of any kind with which to move lumber. The shortage of cars is attributed in the first place to the strike of shop men, which, because of congestion elsewhere, interrupted the flow of empties to the West. This condition went on long enough to reach that time in the fall of the year

when cars naturally would be held for movement of the grain crops. Local mill men do not anticipate any early improvement.

It is estimated that local mills have orders on their books for about 2,500 cars of lumber, representing material on hand to the value of \$2,000,000, which they cannot ship.

Fall River, Mass., September 6th:

Bank clearings for August, 1919, were \$9,518,856, against \$9,010,700 last year.

During August, 1919, 55 building permits were issued, against 28 last year.

Though print cloth sales have been small during the past few weeks, prices have held firm, and there is very little cloth to be obtained for immediate delivery.

The business of the Fall River Gas Works Company is showing a constant increase.

Fort Madison, Iowa, September 5th:

Bank clearings for August, 1919, were \$1,999,698, against \$1,588,567 last year.

Building operations continue very active, and the solution of the housing problem seems not to have been met. There is every indication of extremely prosperous business conditions during the next few months.

Our company is making line extensions in all parts of the city to serve the new houses that are being built.

Fort Worth, Texas, September 4th:

Bank clearings for August, 1919, were \$75,982,596, against \$49,701,926 last year.

During August, 1919, 210 building permits were issued, valued at \$3,014,190, against 83 last year valued at \$206,480.

Stockyards receipts for August were as follows:

	1918	1919
Cattle	119,665	79,278
Calves	33,868	33,434
Hogs	50,451	14,068
Sheep	34,498	23,624
Horses and Mules	5,748	4,493

It will be noted that bank clearings increased approximately 52.8% over last year. In this connection it may be stated that another large bank has been formed known as the National Bank of Commerce with capital and surplus of \$1,500,000.

The building permits for August, 1919, broke the record, the outstanding feature of the month being the large number of new residences in process of construction. The first eight months of 1919 have witnessed the beginning of \$9,038,007 of construction; of this total July and August together have contributed more than \$5,000,000.

The general business outlook for the immediate future is unusually bright.

Our receipts on the Fort Worth division for August, 1919, show an increase of 23.9% over last year, while receipts on the Interurban division show an increase of 21.2%. The receipts of the Fort Worth Auto Bus Company for August, 1919, show an increase of 20.4%.

Galveston, Texas, September 6th:

Bank clearings for August, 1919, were \$42,543,100, against \$21,644,707 last year. Bank clearings for the same month in 1914 were \$10,535,894.

The volume of business for August, 1919, was \$167,487,000, against \$110,579,000 last year.

During August, 1919, 485 building permits were issued, valued at \$58,375, against 376 last year, valued at \$16,036.

Post office receipts for August, 1919, were \$23,046, against \$20,475 last year.

The building permits in August, 1919, broke all records both in number and valuation.

The August wheat movement amounted to 2,110,892 bushels, an increase of 1,964,438 bushels over last year.

Cotton exports for August, 1919, were 159,545 bales, valued at \$5,084,699.

Sugar imports for the year to date exceed the imports of the preceding year by more than 25,000 bags.

There were important commercial developments during August, together with the announcement from Washington confirming the naming of operators for no less than eleven regular steamship lines to European ports, involving the allocation of nineteen boats a month from Galveston and Texas City, and the making public of plans of industrial concerns to establish oil handling facilities on the island on a large scale.

Work is now going forward on a plant, the first unit of which will be in operation September 15th, which will provide facilities for delivering 2,500,000 to 3,000,000 barrels of oil daily to the Missouri, Kansas & Texas Railway, to be used in its engines, which will be converted to the oil-burning type. Fifty-two tank steamers a year will be required to handle the M. K. & T.'s fuel which will be brought from Tampico by the Mexican Petroleum Corporation.

More than \$1,000,000 will be expended on improvements east of the seawall and south of the present jetties by the Gulf Petroleum Company and the Mexican Petroleum Corporation.

Our railway receipts for August, 1919, show an increase of 28.2% over last year, and our lighting receipts an increase of 4.26%.

Haverhill, Mass., September 10th:

Savings bank deposits on August 31, 1919, were \$15,139,725, against \$13,916,373 last year.

During August, 1919, 24 building permits were issued, valued at \$39,075, against 12 last year, valued at \$36,750.

There has been no material change in the general business situation in Haverhill the past month.

Houghton, Mich., September 13th:

General business conditions throughout the copper district remain

practically the same as in the immediately preceding months. Although a number of laborers from the outside have come into the copper country daily, there still continues a large migration to the industrial centres, where higher wages are being paid.

Although general conditions have greatly improved over last year, they are still far from satisfactory. The extremely high prices charged for all commodities have a very serious effect, retail dealers reporting business as very poor.

Houston, Texas, September 9th:

Bank clearings for August, 1919, were \$88,560,700, against \$79,-257,594 last year.

During August, 1919, 405 building permits were issued, valued at \$744,689, against 221 last year, valued at \$278,496.

Real estate transfers for August, 1919, were \$1,457,700, against \$886,643 last year.

The remarkable way in which all lines of trade continued active throughout the summer months, forces the belief that the fall season will be the most prosperous in the history of the city.

The building boom in business houses is growing greater in Houston. A large number of brick, concrete and hollow tile structures are now in process of construction.

It is reported that a number of individuals and companies have been attempting to open business houses here, but have been prevented from doing so by inability to find locations.

The new City Directory indicates that the population of Houston proper has increased 10,000 over the estimate for 1918.

The housing problem continues very acute. Though hundreds of houses have been built in the city and many others are in process of construction, the condition has not been relieved. It is estimated that there are approximately 2,000 families in Houston who are unable to obtain houses. It is reported that families are coming from every part of the United States, and that in very few instances are families leaving the city. It is also reported that the warehouses are overcrowded with household furnishings of families who are unable to find housing accommodations.

Wholesale and retail merchants report a large volume of trade with increases over the previous month. Wholesale merchants report that the oil fields and refineries are stimulating their business to a great extent. They state that the volume of their trade is limited only by their ability to obtain deliveries of the various commodities.

Crop conditions in the state are as a whole very good, but are hardly 10% of normal in the Houston territory, with the exception of the rice crop. The rice farmers are now cutting and threshing their crops and report that a very fair yield will be realized. The rice and cotton crops will soon begin to be marketed, which usually imparts considerable stimulus to general business activity. The late feed crops in this vicinity are in fair condition, which will be of material aid to the farmer, inasmuch as he will be able to carry his live stock through the winter, and it will also help him through the next crop season.

In a word, the business outlook for Houston is very bright, and in all branches preparations are being made for an increased volume of business during September.

The receipts of the Houston Electric Company for August, 1919, show an increase of 8.3% over last year, and those of Galveston-Houston Electric Railway Company an increase of 18.7%.

Keokuk, Iowa, September 3rd:

The business outlook for Keokuk is better than it has been for the last three years. There are fewer empty buildings in town than for months. Local merchants are doing a larger volume of business than ever before. Keokuk, in fact, in the opinion of conservative men of affairs, never had a brighter outlook than at the present moment.

All of the local manufacturing plants are going on full time and turning out maximum production. Figures recently compiled estimate the output of Keokuk factories at \$45,000,000 yearly. There are a number of plants here which may enlarge, and there are prospects of the arrival of new concerns.

The bank deposits in this city now amount to \$6,000,000.

Another indication of prosperity in Keokuk is the fact that there are fewer empty store buildings and houses than at any time in the last three years. Real estate is changing hands and going at higher prices than in the past. Plans are being drawn for a number of new buildings.

Key West, Fla., September 5th:

The cigar output for August, 1919, was 7,074,856 cigars, against 7,074,856 cigars last year.

Customs receipts for August, 1919, were \$53,235, against \$38,834 last year.

The general business outlook depends almost entirely on the outcome of the general cigar strike which was declared in Key West on August 31st.

The general business outlook for the next few months may be said to be favorable, provided the cigar strike is settled within the next few days.

Lowell, Mass., September 12th:

Bank clearings for August, 1919, were \$4,582,535, against \$5,059,062 last year.

During August, 1919, 99 building permits were issued, valued at \$217,740, against 57 last year, valued at \$61,805.

No material change in general business conditions has been noted in the past month. The prosperity of all the manufacturing concerns appears to continue, and mercantile trade remains sound.

Paducah, Ky., September 5th:

Bank clearings for August, 1919, were \$8,154,828, against \$5,826,379 last year.

There is general activity throughout the city in all lines of trade. The tobacco crop promises to be exceptionally good. The plant of the International Shoe Company is in operation and shoes are being manu-

factured in Paducah. With the removal of the embargo on freight shipments to Germany, considerable tobacco is being moved from Paducah to German ports. Business men of long standing state that they never before have seen so much activity in business circles. There is a great deal of building going on. Lumber dealers say they are overwhelmed with orders.

The receipts of the Traction Company continue to show an increase, and the volume of travel is in excess of the same period last year.

The light and power receipts also continue to show increases.

Pawtucket, R. I., September 10th:

The banks report an increase of 23% in commercial accounts in August, 1919, and an increase of 15.1% in savings accounts.

Post office receipts for August, 1919, were \$13,066, against \$17,977 last year.

There has been no material change in general business conditions the past month, every spindle and loom being called on to work overtime in order to fill orders on hand. There is a constant demand for skilled and unskilled labor, manufacturers as well as contractors being seriously handicapped by the scarcity of the same. Day and night shifts are the order of the day in many of the larger mills.

Merchants report an excellent volume of trade in August.

The building trade is very active, more especially in the direction of building new mills or erecting additions to present plants.

Pensacola, Fla., September 11th:

During August, 1919, 131 building permits were issued, valued at \$563,252, against 131 last year valued at \$17,506.

Work has begun on the \$700,000 dry dock for the Bruce Dry Dock Company. This is an Emergency Fleet Corporation project.

Ponce, P. R., September 30th:

During August, 1919, 2 building permits were issued, against one last year.

General business conditions during August were about normal. The outlook seems very good.

On account of heavy rains it is estimated that the sugar crop will be larger than last year.

Coffee picking has begun, and the growers look for a large crop at a good price.

Reno, Nev., September 22nd:

Bank clearings for August, 1919, were \$3,463,375, against \$2,821,919 last year. For the first eight months of 1919, they were \$24,402,062, against \$19,779,683 last year.

During August, 1919, 3 building permits were issued, valued at \$8,700, against 3 last year, valued at \$3,600. The building permits this year included one residence.

Post office receipts for August, 1919, were \$7,885, against \$11,214 last year.

The labor disturbances in the various mining camps of the state have had a depressing effect on general business in Reno. The recent adjustment of difficulties in the Ely and Virginia City districts has already improved general business in Reno, and if the trouble in Tonopah reaches a conclusion a further improvement here should be noted.

During the past month the miners union at Virginia City called a strike, demanding increased wages. After three days' cessation of work the strike was abandoned and the Virginia City mines are operating normally.

Savannah, Ga., September 10th:

Bank clearings for August, 1919, were \$33,890,370, against \$28,170,-430 last year.

During August, 1919, 65 building permits were issued, against 33 last year.

Cotton receipts for August, 1919, were 66,369 bales, against 43,845 bales last year.

Turpentine receipts for August, 1919, were 6,622 barrels, against 6,260 barrels last year.

Rosin receipts for August, 1919, were 21,610 barrels against 24,630 barrels last year.

The Foundation Company shipyard stopped operation during August, and is at present only keeping enough employees on hand for the upkeep of the yard.

During the latter part of August considerable cotton came into the city, but the season is behind, owing to excessive rainfall and the ravages of the boll weevil.

Seattle, Wash., September 10th:

Bank clearings for August, 1919, were \$161,276,082, against \$170,-491,302 last year.

Building permits for August, 1919, were valued at \$1,858,205, against \$1,099,015 last year.

Real estate transfers for August, 1919, were \$2,312,039, against \$1,875,856 last year.

Building is very active, the bulk of the work being residence construction.

Labor conditions continue unsettled.

Early in August the Skinner & Eddy yard reduced about 1,200 men 50c per day. There has been no strike in consequence.

The county's assessment rolls for 1919 show an increase of \$30,000,-000 in the county's wealth. This wealth increase, the greater portion of which is within the city of Seattle, does not record the advance in land values, the change in land values being recorded only in the even years. The exceptional increase in the amount of taxable property is three times the average increase of the past. The increase comes mostly from capital invested in manufacturing and merchandising industries and in hotel and apartment houses.

Sydney, Nova Scotia, September 24th:

During August, 1919, 31 building permits were issued, valued at \$118,650, against 32 last year, valued at \$44,718.

Custom receipts for August, 1919, were \$25,194, against \$86,631 last year.

The output of the Dominion Coal Company for August, 1919, was 242,495 tons, against 288,781 tons last year. Shipments were 244,562 tons, against 267,921 tons last year.

The labor situation remains about the same as before. The Dominion Iron & Steel Company shut down its productive plant on August 23rd, but is keeping approximately 3,000 men at work. It is enabled to do this by reason of somewhat extensive repairs and of the construction work afforded by the new plate mill, which is being rushed to completion.

The furnaces of the Nova Scotia Steel & Coal Company are still being repaired.

The Nova Scotia Steel & Coal Company had a record month at its collieries, 50,800 tons being mined during August, there being only one idle day.

Both the Nova Scotia Steel & Coal Company and the Dominion Coal Company are developing foreign markets.

The receipts of the Cape Breton Electric Company, Ltd., for August, 1919, show a large increase over the previous year.

Tacoma, Wash., September 8th:

Bank clearings for the first eight months of 1919, were \$155,860,-587, against \$151,481,112 last year.

During the first eight months of 1919, 2,747 building permits were issued, valued at \$2,132,285, against 1,919 last year valued at \$2,097,295.

Real estate transfers for the first eight months of 1919 were \$3,149,665, against \$2,676,698 last year.

Tampa, Fla., September 10th:

Bank clearings for August, 1919, were \$6,464,150, against \$5,193,-459 last year.

Building permits for August, 1919, were valued at \$63,915, against \$26,125 last year.

Post office receipts for August, 1919, were \$32,150, against \$27,393 last year.

Customs receipts for August, 1919, were \$97,499, against \$136,606 last year.

Internal revenue receipts for August, 1919, were \$134,000, against \$180,194 last year.

Cigar manufactures for August, 1919, were 16,708,800 cigars, against 33,696,200 cigars last year.

The decrease in the cigar output is due, of course, to the cigar makers strike, no cigars being produced by one of the large factories between August 4th and August 24th, when the strike was declared off.

Both the railway and lighting receipts of the Tampa Electric Company for August, 1919, show increase over the previous year.

Woonsocket, R. I., September 18th:

During August, 1919, 28 building permits were issued, valued at \$49,475, against 12 last year, valued at \$60,400.

Business conditions in all lines continue exceptionally good. Retail trade has been somewhat affected by the prevailing bad weather, but is well above normal.

Building is well above normal, and there is a scarcity of common labor.

The receipts of the Blackstone Valley Gas and Electric Company show a gratifying increase over last year.

News from the Companies

Boston Office

F. A. Tracy, University of Maine, 1919, has entered the statistics department.

R. C. Hopkins, University of Maine, 1919, who entered the statistics department, has been transferred to Houghton, Michigan.

H. R. Whiton, M. I. T., 1919, has entered the statistics department.

J. J. Dowling, Rhode Island State University, 1919, has entered the statistics department.

F. B. Turner, who recently returned from service and was in the mailing department, was transferred to the statistics department September 18th.

Miss Elizabeth Marsh left the statistical department September 27th to engage in teaching at Miss Allen's Cooking School, Boston.

Mr. C. Y. Ferris, who has for so many years been in the insurance division of the statistics department, has been transferred to the securities department. Mr. Worthington Cornell is now taking over some of the work formerly handled by Mr. Ferris.

The statistics department has moved to new quarters on the fifth floor annex, taking over rooms formerly occupied by the industrial department, which has moved to the third floor. The Treasurer's office has enlarged its space to take in the quarters which had been occupied by the statistics department.

Mr. H. L. Rogers, accompanied by Mr. A. L. Snyder of the New York Office, recently left for a business trip to Paris, France.

A number of the members of the Boston Office have done guard duty as a result of the Boston police strike, among them being F. O. Dufour, C. Y. Ferris and Walter H. Burke, all of the Newton Constabulary; John H. Oakes, E. F. Rockwood and O. L. Jones, all of the First Motor Corps; J. W. Gale, who served as a volunteer policeman, and H. M. Yeadon, who served with the 11th Regiment.

Mr. R. M. Harding of Columbus, Georgia, spent a week at the Boston Office.

Mr. G. K. Hutchins of Columbus, Georgia, was here in company with Mr. Harding.

Mr. H. C. Foss of Savannah, Georgia, spent ten days in Boston.

Mr. Hardy Croom of Jacksonville, Florida, was here three days.

Mr. Ray Carroll of Savannah, Georgia, was in Boston four or five days.

Mr. James Sheridan of Tampa, Florida, while North on his vacation, visited the Boston Office.

Mr. Albion Davis of the Mississippi River Power Company, accompanied by Mrs. Davis, called at the Boston Office recently.

Mr. Luke C. Bradley, district manager for the Texas companies, was here for a day.

Mr. Earle L. Milliken, who was manager at Houghton, Michigan, has been appointed manager at Houston, Texas.

Mr. Samuel B. Tuell has succeeded Mr. Milliken as manager at Houghton, Michigan.

Mr. Lawrence E. Eustis has returned from his vacation.

The Treasurer's office has been re-arranged and enlarged, and now occupies the entire fourth floor.

Mr. Ralph Karger, a recent graduate of the University of Wisconsin, has entered the Treasurer's office.

Mr. Clifford Trull, formerly assistant treasurer of the Beaumont companies, has entered the Treasurer's office, having recently returned from overseas duty with the Quartermaster's Corps.

Mr. Frank Wray of the engineering department has announced the birth of a son, Frank Wray, Jr.

The news that a son and daughter (twins) were born to Mr. and Mrs. Joseph Polk was shortly followed by the melancholy announcement that the boy had died. Mr. Polk is of the engineering department.

Mr. F. G. Philo, formerly in the service of the New York Steam Company in the capacity of chief engineer, has entered the station betterment division of the engineering department of Stone & Webster.

Mr. Harry J. Koltz, formerly of the Keystone Steel & Wire Company, is now a member of the station betterment division.

The Converse Rubber Company has placed a contract with Stone & Webster calling for the design and construction of a reinforced concrete storage building.

Baton Rouge, La.

Mr. G. H. Wygant, manager, has returned from a trip to Pensacola and New Orleans. While in New Orleans he attended the convention of the Advertising Clubs of the World and also the Shriner celebration.

Mr. W. R. Bell, commercial agent, attended the convention of the Advertising Clubs of the World, which was held in New Orleans, September 21st-25th.

Mr. Gothard Sargl, engineer, and Mr. P. S. Markle, Stone & Webster accountant, are in charge of the installation of a new water gas set at the gas plant.

The Cumberland Telephone and Telegraph Company has announced the purchase of property at the corner of Convention and St. Hypolite Streets, on which a new exchange and office building will be erected at once.

Fire completely destroyed the Knox Building on Third Street on September 27th. This building was occupied by Strauss Clothing Store and Kress Company. Plans have been completed to rebuild immediately.

The American Tobacco Company has leased a building on Florida Street, which will be occupied as a branch factory employing about 300 women.

Beaumont, Texas

Mr. and Mrs. A. F. Townsend and daughter Pauline returned September 8th from a vacation at their former home, Auburn, Maine.

Mr. R. T. Wright of the accounting department returned recently from his vacation, during which, accompanied by Mrs. Wright, he visited Chicago and Minneapolis.

Mrs. H. L. Ganchan of the stenographic department has been on her vacation.

Mr. J. H. Russell, railway superintendent, passed his vacation, accompanied by Mrs. Russell and daughter Caroline, at Bonham, Texas.

Mr. A. G. Davis of the accounting department left the employ of the company, September 1st.

The trainmen's assembly room, recently completed, is becoming very popular with our employees. A punching bag and boxing gloves have been supplied by the company and informal athletic contests are held every day, to the huge enjoyment of the men off duty. It is planned to hold in this room a series of general employees' meetings of both a social and a business character.

Bellingham, Wash.

The Skagit County Golf and Country Club, a newly formed organization of men from Mt. Vernon, Burlington, Sedro Woolley, and Anacortes, has purchased a beautiful tract of land on the Avon-Allen paved road, which will be cleared at once and upon which a \$15,000 club house will be built with a nine hole course. This is a much needed improvement, as a great many of the men have been playing on the Bellingham Golf and Country Club course at a considerable inconvenience.

The number of automobile licenses issued by Whatcom County has increased over the previous year by 25%.

The dairymen of Skagit and Whatcom Counties are somewhat dissatisfied with the price that the condenseries have paid them for milk and are forming their own associations, with the intention of building a condensery in Skagit County at a cost of \$250,000 and one in Whatcom County at a cost of \$125,000, for the making of butter and cheese, as well as condensed and powdered milk.

Super-dreadnaughts "Wyoming" and "Arkansas" and destroyers "Lamerton," "Breese," "Ramsay" and "Radford" visited Bellingham for two days on September 16th and 17th, Rear Admiral Koontz in charge. The officers, numbering 132, were entertained at dinner by the various citizens in parties of from two to eight on both nights, with a dance afterwards at the Country Club; and the sailors and marines, numbering about 2,500, were also lavishly entertained by the citizens, many of them being invited to the various homes for dinner and others being dined by the Soldiers and Sailors Club, Elks Club, Knights of Columbus and other organizations. Many of the men said that they had a better time in Bellingham than at any place at which they had stayed on their entire Pacific Coast trip.

Mr. Lindley, our assistant sales agent, spent his vacation motoring through Hood River Valley, up Mt. Rainier, and as far south as Salem, Oregon, camping enroute. While he was away Mr. Barber of the Mt. Vernon office assisted in the sales department.

Other vacations were those of Mrs. Tiley, cashier, and Mr. Tiley, assistant despatcher, on a motor trip in Washington and British Columbia; Mrs. Mote, electric bookkeeper, and her sister Miss Havig, interurban ticket agent, on a motor trip to Idaho; Miss McNeil, saleswoman, Vachon Island; Mrs. Harris, Seattle; Miss Wheeler and Miss Gardner, telephone

operators, Seattle; Miss Leonard, stenographer, Seattle and Tacoma; and Mr. Raymond, storekeeper, camping trip up the south fork of the Nooksack.

Out of town visitors during the month were G. E. Quinan, H. J. Gille and E. A. Batwell of Seattle and Mr. Jack Reardon, equipment inspector for the State Public Service Commission of Olympia.

El Paso, Texas

Mr. Alba H. Warren, manager, left for his vacation on September 13th, to be gone about a month. Mr. Warren has visited Chicago and his relatives at Worcester, Mass., as well as the Boston Office. He also attended the A. E. R. A. convention at Atlantic City. Mrs. Warren and Alba, Jr., left a week ahead of Mr. Warren, who joined them in Chicago.

Mr. Chas. A. Brann, assistant claim agent, was pretty badly injured in an automobile head-on collision on the lower valley road, Sunday, September 28th. Mrs. Brann was with him, and while not hurt so badly as Mr. Brann, was very much shaken up. Mr. Brann's collar bone was broken, and he had shoulder fractures. He is doing nicely at Hotel Dieu. Mrs. Brann is at home. Mr. C. N. Wylie is taking Mr. Brann's place until he is able to be about again.

Mr. L. E. Delf, who recently returned to the company and was clerk to the master mechanic, is now with Mr. Alexander, light superintendent, doing engineering and statistical work. Mr. Delf was succeeded by Mr. F. G. Frye in the master mechanic's office.

Mr. H. I. Waumban, foreman meter testers, has returned from his vacation, which was spent in and around Tyrone, New Mexico.

The following employees in the accounting department have returned from their vacations: Mr. Thomas Slade, clerk, from visiting home folks in North Carolina; Miss M. O'Boyle, stenographer; Mrs. L. Compton, lighting ledger clerk; Mrs. F. Martin, transfer clerk.

Mr. H. L. Red, foreman of meter readers, was married to Miss Lula Alice Howell of Plainview, Texas, Wednesday, September 17th. Mr. Red took his vacation for the occasion, and they are now at home, 610 Prospect Avenue. Mr. Red is one of the oldest of our employees.

Fort Madison, Iowa

P. I. Robinson and family spent their vacation in Chicago during the month of September.

H. T. Edgar and David Daly visited Fort Madison on Friday, September 26th.

Near the Factoria addition, in the west end of this city, the first seventeen houses of a unit of thirty-five are already under construction. Building operations in all parts of the city are becoming more active, but the housing problem is as serious as ever.

On September 7th, fire of an unknown origin destroyed a large number of buildings located in the alley of the 800 blocks of this city. For a time this fire threatened the entire business district, but was placed under control before serious damage was done.

Fort Worth, Texas

Mr. F. S. Pratt, W. H. Burroughs, W. L. Locke of Boston, together

with Mr. E. T. Moore of Dallas, Texas, spent several days in Fort Worth and the surrounding territory during the past month.

Mr. V. W. Berry, general superintendent, and family spent several days in Mineral Wells during the month.

Mr. Luke C. Bradley, district manager, spent one day in Fort Worth.

Mr. L. A. Sargent, foreman of Handley car barn, has announced the birth of a son on September 29th.

Galveston, Texas

Mr. W. M. Howard has succeeded Mr. R. L. Miller as assistant claim agent. Prior to coming to Galveston, Mr. Howard practiced law in San Antonio, Texas.

Mrs. W. E. Wood and little daughter, Miss Mary Louise, are sojourning in Asheville, N. C.

Mr. R. C. Allen, supervisor of transportation of the Northern Texas Traction Company, paid us a pleasant visit during the month.

Mr. Luke C. Bradley, accompanied by Messrs. F. S. Pratt and W. B. Locke, was in Galveston and made a brief inspection of our property.

Mr. John J. Fennessy, formerly chief clerk of the Beaumont accounting department, is spending his vacation in Galveston and was a visitor at our office. Mr. Fennessy is now located at Wichita Falls, where he is interested in the surrounding oil fields.

Mr. Edw. T. Keck, formerly chief engineer of the Port Arthur properties, paid us a visit during this month. Mr. Keck is now in the employ of the Texas Power and Light Company, with headquarters at Dallas.

Mr. J. F. McLaughlin, clerk to Mr. Luke C. Bradley, spent the week end in Galveston.

Mr. W. E. Wood sailed via Mallory Line, on the steamship "Comal" on September 6th for Key West, Fla., on a six weeks' vacation. He expected to visit Jacksonville, Augusta, Beaufort, Asheville and Atlantic City, where he attended the Street Railway Convention on October 6-10th. On the way home he will stop at Asheville, where he will be joined by Mrs. Wood and little daughter.

The steamship "Comal," on which Mr. Wood sailed for Key West, ran aground during the recent hurricane which struck Key West, but word has been received from Mr. Wood that the boat reached its destination safely and that all passengers were saved.

The terrible hurricane which swept the Texas coast on September 13-14th, and which struck Corpus Christi, did little or no damage to Galveston. The only loss suffered by the company was that the street cars could not be operated on Sunday, the 14th, on account of the tracks being submerged in water. On Monday the company resumed its service at the usual time and all other places of business were in full operation. Our power station operated continuously throughout the storm.

The mighty structure, our Seawall, has again proved its worth to our city. Had it not been for this wonderful piece of architecture, Galveston would again have been the victim of severe losses in both property and lives.

Mr. Luke C. Bradley, accompanied by Mr. J. F. McLaughlin, visited

Galveston the day following the storm to inspect the causeway and Galveston property. The only damage reported by Mr. Bradley was the washout of approximately 1,500 feet of the steam road lines.

The employees of the Galveston Electric Company raised a relief fund of \$230 for the storm sufferers along the Gulf Coast, in addition to the contribution made by the company.

Haverhill, Mass.

Elliott G. Austin, works clerk, has left our employ to enter Columbia University. His position has been filled by J. A. Sullivan, formerly of the statistical department.

Lt. Tom P. Walker, who recently returned from overseas, has re-entered the service of this company, having been appointed superintendent.

The employees of this company were entertained by Mr. Bryan of the Safety Engineering Department of the Liberty Mutual Insurance Company on Thursday evening, September 25th. The first thing on the program was a one reel comedy entitled "Farmer Alfalfa's Catastrophe." Then Mr. Bryan gave a brief talk on accidents, particularly those in the gas industry. The two reel picture "The Outlaw" was then shown. An Illinois clam bake was served, followed by dancing.

Mr. William Bell, superintendent of distribution, has been spending the past two weeks in Yonkers, N. Y.

Mr. George Jones, meter repairer, spent a pleasant vacation at Wilmington Iron Works, N. H.

Mr. J. W. Murphy, superintendent of works, also spent the first two weeks in September as a vacation.

Houston, Texas

David Daly, manager of the Houston Electric Company and the Galveston-Houston Electric Railway Company, has been transferred to Keokuk, Iowa. Mr. Daly will be District Manager for the Mid-West properties under Stone & Webster management, which include the Mississippi River Power Company. Mr. Daly has been in charge of the Houston properties since 1905, and his loss will be keenly felt by the entire organization, and most particularly by the department heads, as the major portion of them have been with him during the entire time that he has managed these properties.

Mr. Luther R. Nash, of the Boston Office, visited Houston recently.

J. H. Russell, superintendent of railway of the Eastern Texas Electric Company, spent a day in Houston on his way to Bonham, Texas, where he spent a two weeks' vacation.

G. G. Morse, general superintendent of the Galveston Houston Electric Railway Company, spent a vacation with his family in Rumford, Maine, and has now returned.

Luke C. Bradley, district manager of the Texas properties, attended the convention of the American Electric Railway Association at Atlantic City, October 6th. Mr. Bradley is president of the Transportation & Traffic Association.

On September 14th, a hurricane traveling at the rate of 80 miles an

hour struck Corpus Christi, which is 245 miles from Houston. The disturbance was first reported to us, through the local weather bureau on September 3rd, as originating south of Porto Rico. The outer edge of the storm struck Key West, Florida, and entered the Gulf September 8th. It continued and next struck land at Burwood, La., keeping its course across the Louisiana coast until it reached Corpus Christi. While the storm was passing the vicinity of Houston and Galveston, it caused a maximum velocity of wind at Galveston of 60 miles, and at Houston of 36 miles.

The high water at the Galveston Causeway caused the washout of approximately 100 feet of the steam railroad company's tracks on the Galveston approach to the Causeway. On account of the high water at the Causeway, we stopped operation to Galveston at 10 P.M., Saturday, September 13th, only operating as far as Texas City Junction, which is 14 miles from Galveston. We did not resume operation to Galveston until Monday, September 15th at 4 P.M.

We were very fortunate, as our properties suffered no great damage, there being but a few slight washouts south of Texas City Junction.

Keokuk, Iowa

On September 26th, Mr. H. T. Edgar and Mr. David Daly arrived in Keokuk on a business trip.

On Monday evening, September 29th, the heads of departments of the Mississippi River Power Company, Fort Madison Electric Company, and Keokuk Electric Company, gave a dinner at the Hotel Iowa in honor of Mr. David Daly, who has been appointed district manager of the Middle West District of the Stone & Webster properties. Senator Frailey of Fort Madison and Judge William Logan of Keokuk were speakers of the evening. Mr. Frailey gave a very interesting talk on "Americanism." Judge Logan gave the address of welcome and Mr. C. A. Sears, manager of the Power Company, acted as toastmaster.

During September there has been installed in Keokuk 410 H.P. in motors, 372 H.P. being at the Standard Four Tire Company.

The enrollment of the Keokuk High School is the largest in the history of the school. There is not sufficient room for all the pupils enrolled, a condition which is causing the faculty and the School Board considerable worry.

Mississippi River Power Company

The installation of the Fluid Compressed Steel Company has been completed and initial service was established on September 27th. This customer has a present connected load of 800 Kw-a.

Mr. N. T. Wilcox, sales manager, attended the Fifth Annual Chemical Exposition, held in Chicago during the week of September 22nd.

Keokuk Electric Company

Mr. J. P. Ingle, manager, attended the Mid-Year Meeting of the Iowa Electric Railway Association, which was held in Davenport on September 17th and 18th. Mr. Ingle also attended a joint meeting of the Iowa Section, N. E. L. A. and the Iowa Electric Railway Association in Des Moines, from September 23rd to September 25th.

Mr. I. R. Carlson, solicitor, returned from his vacation on September 22nd.

Miss Ida E. Ulrich, bill clerk, returned from her vacation on September 22nd.

Mr. Harry A. Helwig, clerk in the accounting department, left the employ of this company September 30th. Mr. Carl E. Nelson, formerly utility clerk, has taken his place. Mr. Lawrence Clements has entered our employ, filling the vacancy caused by the promotion of Mr. Nelson.

Miss Maude K. Immegart, pay roll clerk, and Miss Inez L. Seifert, railway analysis clerk, have returned from their vacations.

Mr. James M. Wetherington, gas superintendent, has left the employ of this company. Mr. Charles O'Laughlin of Pawtucket, R. I. has been selected to fill the position of gas department superintendent.

Mr. Vittinghoff was in Keokuk for a few days during the month of September.

The new lift to our gas holder is nearing completion. When this work is done, we shall have doubled the gas storage capacity, and shall be able to make sufficient gas by operating in the day only, whereas now we are obliged to run a night shift as well as a day shift to supply the city with gas.

Key West, Fla.

Mr. R. K. Patton, who was chief clerk in the accounting department, resigned on August 31, 1919. He has accepted a position as auditor with the Dravo Contracting Co., at Neville Island, Corapolis, Pa.

Mr. J. O. Moseley, of Boston, Mass., has been transferred to the power plant.

On the 9th and 10th of September, this city was struck by a severe hurricane, during which it is estimated that the wind attained a velocity of 120 miles per hour. Estimated property damage in Key West is placed at \$2,000,000. No lives were lost in the city itself, but several were lost along the water front, and the Spanish steamer, "Valbanera," en route from Spain to Cuba, sunk about forty miles from Key West. Not one life was saved, and she is reported to have carried 300 passengers, and a crew of 152, totaling 452 lives lost.

The city has taken up the work of repairing with a splendid spirit, and already most of the traces of the terrific storm have disappeared.

Mr. W. E. Wood, manager of the Galveston Electric Co., Galveston, Texas, paid Key West a rather exciting visit during the month of September. He arrived here on the Mallory steamer "Comal" from Galveston on September 9th, and left for North Carolina on the first train leaving after the storm, which was on the 11th.

The City Park deal with the Gato Cigar Company is closed and the deeds to the park have been executed and turned over to the city. Work of building the new cigar factory, which will cost approximately \$80,000, will commence at an early date.

The Government of Cuba has appropriated \$100,000 to be used in the construction of a new San Carlos building, which is to be a memorial to the Americans who aided Cuba in her struggle for independence. The cornerstone of this building will be laid on October 10th.

Mr. John W. Kelly, who has been here for several years in the position of clerk in the accounting department, has left for his vacation, after which he will report to the Boston Office.

Savannah, Ga.

Mr. H. A. Kimball of the Division of Construction and Engineering is in Savannah to convert some of our boilers into oil burners, and also to install the necessary tanks for storage of the fuel.

Mr. R. G. Carroll has just returned from a combined business and pleasure trip to Boston.

Mr. Lionel E. Drew, assistant treasurer, has moved into his new home on the Granger Tract. Mr. E. W. Jewett of the accounting department also moved on October 1st into his new home on East Anderson Street.

Mr. B. H. Campbell, recently from "Over There," has been appointed cashier, succeeding Mr. Figg, who has been transferred to the customers' billing department.

Mr. Joe Comer has resigned his position on the billing desk to accept a position with a cotton export house.

Mr. J. L. Horrell has resigned to take a place with one of the naval stores exporters.

Mr. Charlie A. Richardson has accepted the position made vacant by Mr. Horrell.

Mr. Ernest Schmitt has returned from a vacation trip to Chicago.

Paymaster Myrick and Inspector Hilson are spending a week in the country. It is reported that they have had a very successful deer hunt.

Mr. Leo Smith, purchasing agent, and Mr. John Rollinson, superintendent of meter department, are the crack fishermen of the company. They go down to Warsaw Sound every other week end and report a large catch of trout, bass, etc., besides lots of yellow tails and kitties. Rollinson caught a four-foot shark recently.

Mr. E. S. Roberts of the commercial department has been on his vacation trip.

Mr. A. J. Monnen has arrived from Tampa and taken up his duties as assistant chief engineer.

Mr. W. T. Sneed has left the employ of this company.

Seattle, Wash.

Since closing the deal for the sale of the Seattle railway properties to the city, there has been a gradual cleaning out of railway offices in the Electric Building and a transfer of their occupants and railway property to the County-City Building, the last to go being the dispatchers' office with its impedimenta. The delay in the removal of this department was occasioned by the necessity of installing in the city railway offices a complete duplication of switchboards and of the intricate wiring necessary to the work, without disturbing reports on operation.

The dispatcher's office was moved early in September. Since the movement of all of the railway offices, the remodeling of the several affected floors of the Electric Building has been going slowly ahead so as not to interfere with the work of the operating offices of the light and

power department, and the task is about completed. A number of offices formerly connected directly with the executive offices in the Stuart Building have been brought into the Electric Building, including those of the industrial department (W. E. Herring), publicity agent (E. H. Thomas), freight traffic manager (W. H. Somers), a part of the legal department (Hugh Tait), and another section of the legal and tax department, with Capt. N. W. Brockett. The real estate and insurance department (D. N. King) has also been moved, and the several offices named, together with departments originally in the Electric Building, have been planned in suites adjoining those with which the several sections have a close working arrangement.

The offices for the use of the general accountancy department (F. P. Dexter) are finished, but it probably will be another month before they are occupied. The office of the general sales manager (H. J. Gille) has been moved from the first to the second floor, and the office of the commercial agent of the sales department (E. A. Batwell), formerly the publicity department, remains on the second floor and adjoins that of Mr. Gille. Chief Engineer G. E. Quinan is also on the second floor. Besides the several offices on the second floor included in the above list, there is an adequate assembly room with a seating capacity of one hundred and fifty.

Thus far changes on the upper floors are unimportant, the third floor, which has been largely for operating officials of the railway department, still being occupied by the manager (D. C. Barnes), the superintendent of buildings (J. C. Conway) and the superintendent of light and power (John Harisberger), with a number of vacant offices that are temporarily occupied by engineers from the sixth floor, waiting for the changes that are to be made at that level.

The Stone & Webster Department of Engineering and Construction is in possession of most of the fourth floor, a section of which, however, is still populated by the legal department, and the fifth floor is unchanged and used by the assistant treasurer (W. E. Best) and his accounting organization. On the first floor the appliance department uses the south half of the building, and in the contract department, on the north half, the assistant sales manager (R. W. Clark) has moved into Mr. Gille's former office, while L. R. Grant, appliance sales manager, has taken Mr. Clark's former office.

The Northwest Electric Light & Power Association held its annual convention in Seattle on September 25th, 26th and 27th. While there was an ample social program in connection, the convention of this year settled down to a constructive series of sessions and accomplished much that was important to the electrical industry in the Northwest. There was a good representation of visitors from California, representing the Pacific Coast section of the N. E. L. A., and the member representation from the several states included in the association was liberal.

The concluding session of the association elected John B. Fiskien, of the Washington Water Power Co., Spokane, president; F. D. Nims, of the Washington Coast Utilities Co., vice-president for Washington; George L. Myers, of the Pacific Power & Light Co., of Portland, vice-president for Oregon; W. D. Putnam, Idaho Power Co., of Boise, vice-president for Idaho; W. F. Kerr, Montana Power Co., of Butte, vice-

president for Montana, and W. E. Herring, Puget Sound Traction, Light & Power Company, Seattle, secretary.

Mr. John B. Fiskien, who was elected president of the association, was not in attendance, but was a visitor in Seattle after adjournment, on his way to Spokane from Los Angeles, where he had attended the meeting of the National Association of Electrical Engineers.

President A. W. Leonard and Seattle Manager D. C. Barnes, accompanied by Mrs. Leonard and Mrs. Barnes, left Seattle on the night of October 1st, on the steamship "Governor," for California, going to San Francisco, to which point Mr. Leonard's car had been shipped. The party planned to spend several weeks in motoring through Southern California.

On October 13th, the several assistant treasurers from the Puget Sound District, left for Boston, to attend the triennial meeting of Stone & Webster assistant treasurers from various parts of the country. The party includes General Accountant F. P. Dexter, Seattle; W. E. Best, Seattle; F. P. Dabney, Seattle; W. E. Wilmot, Tacoma; John Hickok, Bellingham, and Carl F. Kirchhaine, Everett.

Tacoma, Wash.

Mr. W. E. Wilmot, assistant treasurer, attended a meeting of the assistant treasurers of Stone & Webster properties, which was held in Boston in October.

Mr. Clifford George, assistant superintendent of Lines in the power department, resigned from these companies October 1st to accept a position with W. R. Hendrey & Company, Seattle, as salesman of mechanical and electrical equipment, having as his territory the states of Washington, Oregon and Idaho. Mr. George came to these companies from the Boston office in 1913.

Week-end hunting trips have been enjoyed by Mr. K. C. Schluss, superintendent of power and equipment; Mr. W. E. Wilmot, assistant treasurer; Mr. Henry Leaver, roadmaster; Mr. H. K. Monroe, assistant superintendent of power, and Colonel H. G. Winsor, superintendent of investigation and adjustments.

Arrangements have been made for the financing of the new \$1,000,000 Scandinavian American Bank Building in Tacoma, and work on construction of the new building will be started shortly. The building will be a fifteen-story structure.

Tampa, Fla.

Mr. James Orr of the Betterment Division, formerly chief engineer of this company, visited us during the early part of October.

Mr. T. J. Hanlon, Jr., manager, has been confined to his bed for several days.

Mr. W. M. Bird, superintendent of transportation, attended the Electric Railway Convention at Atlantic City, October 6th to 10th.

Mr. B. M. Harrison, claim agent, was called to Jacksonville on September 23rd by the death of his father, Mr. L. Harrison.

Mrs. G. A. Webb of Savannah, Ga., visited Tampa on October 2nd to 7th.

Mr. R. E. Cashwell, meter foreman, announces the birth of a son on October 3rd.

Mrs. M. B. Wright, railway clerk, has resigned and will take up her residence in Baltimore. She has been succeeded by Miss Sallie Lee Lewis.

Mr. Sterling W. Canter has entered the accounting department as ledger clerk.

Mrs. L. E. Edwards, transfer clerk, has resigned. Miss Cecelia V. Reed has been employed as transfer clerk.

This company sent five men from the line department to assist the Key West Electric Company repair the damage done by the recent hurricane.

The highest tide recorded during the 30 years' existence of the local weather bureau occurred on September 11th, as a result of the hurricane which struck the Gulf Coast. Perfect weather conditions prevailed and no material damage was suffered in this city.

Work has been commenced on the new Victory Theatre, which will be located two blocks from our office. The building will be three stories and constructed of reinforced concrete. The opening has been set for the early part of February next, and legitimate attractions will be shown during the winter, with moving pictures in summer.

Woonsocket, R. I.

Arrangements have been recently completed to extend our power lines to reach the Lafayette Worsted Company. This company has been rapidly expanding, and has found it necessary to add 200 kilowatts in power, which we will serve them beginning about October 20th.

A. A. Spitz, Providence, R. I., has recently purchased the Universalist Church property on Main Street, and is going to build a modern moving picture theatre. If the present plans are followed out, the building will include many new stores and offices. The Universalist Church is planning to build a \$150,000 edifice as soon as suitable land can be purchased.

The company is installing a new heating system at No. 2 station. This system will heat the Buckland & Clarke building, and the Evening Call Publishing Company property.

Guy C. Andrews, assistant superintendent of the gas department, spent his vacation at Portland, Maine, visiting his mother.

P. F. Hodgkins, general superintendent, and H. J. Pettengill, Jr., commercial manager, attended the convention of the New England Section, National Electric Light Association, at New London, September 22nd to 24th. Mr. Pettengill had the distinction of being the only one present to win prizes in both the golf and tennis tournaments, winning a bronze cup awarded in the tennis doubles, and bringing home a dozen golf balls as a prize in the golf tournament.

Miss Elsie Sederman has joined our office force, taking the place of Miss Lucy Williams, who left the employ of the company recently to be married.

W. Orrell Davis has been recently made information clerk, succeeding Edward Sauvageau, who has been transferred to the meter department.

Harry L. Pratt, who was with the company for eight years as cashier and outside salesman, recently left the company's employ to take a responsible position with the Metropolitan Life Insurance Company.

LIBRARY NOTES

Mr. Frank E. Wood of 42 Hill Street, Whitinsville, Massachusetts, has established a *magazine subscription agency*, and appears to be making a decided success of the same. He was with Stone & Webster for some time, but was taken ill and had to give up active engineering work.

The *Boston Public Library* has issued its list of free lectures for Thursday evenings at 8.00 P.M. and Sunday afternoons at 3.30, beginning October 23. A copy of these may be seen in our Library, or the list may be obtained from the Public Library.

"*Modern Punctuation*," by George Summey, Jr., is a 265-page book which we might to advantage study if interested in this subject. The author finds it impossible to give a single working principle for punctuation, so that we need to absorb the general idea. He says:

"In cases of punctuation it is necessary to apply one or more of several considerations. There are questions of custom, clearness, emphasis, movement, economy, variety — sometimes even of appearance on the page. By force of custom, points are signals which indicate certain relations. At the same time they are suspensive marks which check movement and suggest certain weights of emphasis. Even the consideration of variety is important. Noticeably monotonous pointing is a symptom of lifeless structure."

The Commission on *Extension Courses* of 19 University Hall, Cambridge, Massachusetts, has issued a 30-page booklet describing the opportunities for education apart from the regular college work. The following institutions are represented for 1919-1920:

Harvard University	Boston University
Museum of Fine Arts	Tufts College
Mass. Institute of Technology	Wellesley College
Boston College	Simmons College
Massachusetts Board of Education	
School Committee of the City of Boston	

These courses are largely in the evening, although a few are in the morning.

"*Fifty Years of Iron and Steel*," by Joseph G. Butler, Jr., is an informative work containing the portraits of many men who have been identified with the progress of these industries.

It gives an interesting history, savoring of romance. One hundred copies of the second edition were printed. Ours was received with the compliments of the author.

The report of the Director of the "*States Relations Service*" is suggestive of how much the Department of Agriculture and its affiliated bodies do for the progress of farm work and home economics. The organization of the service includes the following offices:

- (1) The Office of the Director, which deals with the general business and administration of the service and the work relating to agricultural instruction and farmers' institutes;
- (2) The Office of Experiment Stations;
- (3) The Office of Extension Work in the South, including the farmers' co-operative demonstration work and the co-operative extension work in 15 Southern States;
- (4) The Office of Extension Work in the North and West, including the farmers' co-operative demonstration work and the co-operative extension work in 33 Northern and Western States;
- (5) The Office of Home Economics, including investigations relative to foods, clothing, and household equipment and management.

The "*New Zealand Official Yearbook*" for 1918 contains over 800 pages and appears to be a well-nigh complete handbook of the activities of that country. It suggests a model of what we might have for New England, or for the different states. We have been on the complimentary mailing list for this for some years back.

"*Applied Indexing*," issued by the Amberg File and Index Company, is a good illustration of a handbook published in the interests of commerce, and makes one want to ask what other organizations that deal with index material publish something similar.

"The Annals of the American Academy of Political and Social Science" for September is devoted to *Modern Manufacturing*, with a sub-title, "A Partnership of Idealism and Common Sense." On the cover page is the following statement:

"To see industry as a whole, and then to see it correctly as to each of its details is the duty of the hour. Only thus can 'production — still more production' be secured. Proper industrial relations must be established as between the employer and the employee. Only thus will the true mutuality of their interests become apparent. Granted such a foundation of equitable dealing we must through effort, and with the aid of science, rear an industrialism yielding the greatest quantity of goods consistent with the physical, mental and moral well-being of our people. This undertaking imposes novel tasks on the managers as well as on the 'workers.' To this high task the spirit of America now dedicates itself."

LIBRARY OF STONE & WEBSTER

Recent Accessions

(10) Civil Engineering

- 549 What is mill building construction? An exposition of the essentials governing this type of fire-resisting building and of the details that distinguish it. F. W. Dean. [Reprint from Engineering News-Record, Dec. 27, 1917.] New York [1917]. 7p, 9x12. V*077.D34
- 550 Design of heavy timber mill construction buildings of southern pine. Compiled by C. E. Paul. Southern pine specifications for mill construction, prepared by National Lumber Manufacturers Association — Engineering Bureau. Technical Letter No. 12-A. Jan., 1918. 4p, 8x11. V*077.So884
- 551 Southern Pine Manual: standard wood construction. Southern Pine Association. Chicago [c1919]. 136p+, 4½x7, illus. *0774.-So884
- 552 Plans to develop huge water power of the Rhone River. (Clipping from "Boston Herald," Aug. 25, 1919.) *0732.B6572
- 553 How "cost-plus" plan helps to speed up building... A. E. Wells. [Reprint from The Bankers Monthly for June, 1919.] 4p, 9x12½, illus. V*077.W4629

(20) Electricity

- 554 Report by the Committee on Electricity to The Corporation of Glasgow... for the year from June 1, 1918 to May 31, 1919. 63p, 8x13. *7192.0511. 6/1/18-5/31/19
- 555 Safety standards of the Industrial Board, Pennsylvania Department of Labor and Industry. Electric code operative on and after July 1, 1917. Harrisburg, 1916. 184p, 6x9. *1802.0294

(30) Mechanical Engineering, (40) Mining

- 556 Boiler chemistry and feed water supplies. J. H. Paul. 242p, 5½x9. *074.P281
- 557 Coke and by-products in 1916 and 1917. C. E. Leshner and W. T. Thom, Jr., Sept. 19, 1919. U. S. Geological Survey. Wash., 1919. (64p), 6x9. *6874.075ck.1916-17
- 558 Mineral Resources of the United States, 1916. Part II. — Non-metals. United States Geological Survey. Wash., 1919. 1115p, 6x9, maps. *6874.075. Pt. II. 1916

(50) Railways

- 559 Our electric railway problems: what they are and some suggested solutions of them, being excerpts from testimony given before the Federal Electric Railway Commission, appointed by President Wilson to inquire into all phases of the electric railway situation and make recommendations for remedying it. nd. 31p, 4x9. *6948.034t
- 560 A discussion of the railroad problem and a plan for future management and operation of transportation; also, an outline of the League's railroad bill as introduced by Senator Lenroot, before the Committee on Interstate Commerce of the House of Representatives, Wash., D. C., July 29, 1919. N. L. Amster. Boston, 1919. 32p, 6x9. *022.Am88
- 561 Railroad progress report of the American Association of Engineers, Aug. 15, 1919. 31p, 6x9. *6909.052

(73) Sociology and Business

- 562 Modern manufacturing: a partnership of idealism and common sense. The Annals of the American Academy of Political and Social Science. No. 174. September, 1919. Philadelphia, 1919. 324p, 7x10. *029.Am35mo
- 563 Industries and the State under socialism. (Address before the National Conference of State Manufacturers Association, at St. Louis, Mo., Feb. 14, 1919.) R. G. Brown. Minneapolis, 1919. 21p, 6x9. *029.B816
- 564 The Sheldon Science of Business Department of Burdett College, Boston, nd. unpag. 3½x6½. *087.B891
- 565 The diagram of organization of the Stone & Webster Division of Construction and Engineering, dated Aug. 7, 1919. 9½x7½. *610.064; also, diagram of the New York office, dated Sept. 4, 1919. 10½x8. *610.064ny

(74) Financial

- 566 Memorial to the Congress by or on behalf of the fifty million American citizens owning or directly interested in railroad securities. . . . National Association of Owners of Railroad Securities (Warfield Plan). [1917] unpag. 8½x14. *022.N2137
- 567 Testimony . . . of S. D. Warfield before Committee on Interstate and Foreign Commerce, House of Representatives, upon presentation of a memorial to the Congress representative of investing and business interest. Aug. 29, 1919. National Association of Owners of Railroad Securities. Baltimore [1919]. 27p+, 8½x10. *022.N2137t
- 568 Harvard and the future. The Harvard Endowment Fund. Cambridge, 1919. 24p, 9x12. *1445.H26

(76) Legal

- 569 New legislation of especial interest to gas, electric and water companies and municipalities owning lighting plants. 1919. Massachusetts Board of Gas & Electric Light Commissioners. Boston, 1919. 46p, 6x9. *1407.0319.1919
- 570 South Dakota laws relating to public utilities, 1919. Board of Railroad Commissioners, South Dakota. 16p, 7x10. *4604.036
- 571 Report of Board of Arbitration appointed by the city of Buffalo and the International Railway Co. of Buffalo, New York. 1919. (15 typewritten sheets), 8½x11. *1711.Ar16.0521

(80) Statistics

- 572 Prices of petroleum and its products during the war. J. E. Pogue and Isador Lubin. U. S. Fuel Administration. Wash., 1919. 55p, 6x9, illus. *6839.F952.02
- 573 The Manual of Statistics: Stock Exchange Handbook, 1919, forty-first annual issue. . . . The Manual of Statistics Co. New York [c1919]. 1106p, 5½x8, maps. a*025.M31.1919
- 574 The decennial census of the Commonwealth, 1915. Part IV. — Occupations. Massachusetts Bureau of Statistics. Boston, 1918. (144p), 6½x10. *1402.C33.Pt.4.1915
- 575 The New Zealand Official Yearbook, 1918. Prepared under the instructions of the Government of New Zealand. Malcolm Fraser, Government Statistician. Wellington, 1918. 837p, 6x9. *7380.02y.1918
- 576 Statistics of the Dominion of New Zealand for the year 1917. Vol. IV. — Education, local governing boards, miscellaneous. New Zealand Government Statistician. Wellington, 1918. 194p, 8x13. *7380.02. Vol. 4.1917

(90) Sources of Information

- 577 Directory of Directors in the city of Boston and vicinity, 1919. Bankers' Service Co. Boston [c1919]. 1212p, 6x9. a*1461.D62. 1919
- 578 Rand McNally Bankers' Directory and The Bankers' Register, with list of attorneys. The Bankers' Blue Book, July, 1919 ed. Rand McNally & Co., publishers. New York [c1919]. 2118p, 8x11. *025.R15.7/19
- 579 Readers' Guide to periodical literature (cumulated): an author and subject index to 104 periodicals and reports. Vol. IV, 1915-1918. Edited by E. J. Sherwood and E. A. Painter. New York, 1919. 2193p, 7x10½. *096.R223. Vol. 4.1915-18
- 580 Index to Engineering News for the years 1910 to 1917, inclusive. Compiled by N. C. Rockwood. 1st ed. New York, 1919. 469p, 6x9. a*096.En3e. 1910-1917
- 581 University Extension Courses, 1919-20; offered by the Commission on Extension Courses. Boston, 1919. 30p, 5½x7. *1445.-H26un.1919-20
- 582 The school of Landscape Architecture, 1919-20. Official Register of Harvard University. Vol. XVI. July 7, 1919. No. 23. Cambridge, 1919. 55p, 5½x7½. *1445.H26l.1919-20
- 583 List of some of Stone & Webster publications. Revised, 8/28/19. 1 typewritten sheet, 8x11. *610.096
- 584 Lampblack: a bibliography. E. H. McClelland. Carnegie Library of Pittsburgh. 1919. 8p, 6x9. *096.C211l
- 585 Seventeenth annual catalogue of Simmons College, 1918-19 (including Pts. I-IV). Boston, 1918. vp, 6x9. *1461.Si47.1918-19
- 586 What to see in El Paso, Texas: a booklet containing information of value to the tourist... Published under the auspices of the El Paso Chamber of Commerce by R. D. Lanehart. 1917. 95p, 4x9, illus. *5241.0651
- 587 The business book specialist, 1919 ed. Selected lists of business books (a shop where out-of-print books, new books and a courteous co-operation may be found always). Dixie Book Shop. New York, 1919. 16p, 5½x8½. *096.D6429
- 588 Alumni directory: College of Engineering, University of Colorado, 1897-1919. The University of Colorado, Journal of Engineering. Boulder, 1919. 48p, 6x9. *5500.Un3.1897-1919
- 589 Yearbook for 1919. Racquet and Tennis Club. New York, 1919. 134p, 5½x7. *1791.R1157.093.1919
- 590 Pacific Marine Review: the National Magazine of Shipping. Official organ of the Ship Owners Association of the Pacific Coast. Published on the first of each month. San Francisco, 1919. vp, 9x12½, illus. PMR. 9/19
- 591 The Draftsman. R. W. Shelmire. Chicago [c1919]. 94p, 6x9.*079. Sh449

Miscellaneous

- 592 Treaty of Peace with Germany. International Conciliation. Sept., 1919. No. 142. New York, 1919. 265p, 5x8. *6999.Am352t
- 593 Seventh annual report of the Conservation Commission of the State of New York, 1917. New York, 1919. 357p, 6x9. *1703. 1917
- 594 "The Birthday of Our Constitution." Prepared by the National Industrial Conference Board in order to describe the essential features of the Constitution and the benefits derived from it by every citizen in the protection of his "life, liberty and pursuit of happiness," as set forth in the Declaration of Independence. Boston [c1919]. 7p, 3½x6. *6800.N2133c

COUPONS AND DIVIDENDS DUE

			Per Cent.
Oct.	1,	Beaumont Traction Company 5s, 1943.....	2½
Oct.	1,	Columbus Electric Company 5s, 1933.....	2½
Oct.	1,	Columbus Power Company, The, 5s, 1936 ...	2½
Oct.	1,	Connecticut Power Company, The, 5s, 1963...	2½
Oct.	1,	Everett Railway and Electric Company 5s, 1921.....	2½
Oct.	1,	Everett Railway, Light and Water Company 5s, 1925.....	2½
Oct.	1,	Galveston-Houston Electric Railway Com- pany 5s, 1954.....	2½
Oct.	1,	Haverhill Gas Light Company, Capital Stock (\$50 par)	2¼
Oct.	1,	Houghton County Traction Company, Pre- ferred Stock, 6 per cent.....	3
Oct.	1,	Nevada Power, Light and Water Company 6s, 1932.....	3
Oct.	1,	New London Gas and Electric Company, The, 5s, 1927.....	2½
Oct.	1,	New London Gas and Electric Company, The, 5s, 1929.....	2½
Oct.	1,	Savannah, Thunderbolt and Isle of Hope Rail- way, The, 4s, 1947	1
Oct.	1,	Tacoma Railway and Power Company 5s, 1929	2½
Oct.	1,	Woonsocket Electric Machine and Power Com- pany 4½s, 1943.....	2¼
Nov.	1,	Cape Breton Electric Company, Limited, Pre- ferred Stock, 6 per cent.....	3
Nov.	1,	Cape Breton Electric Company, Limited, Common Stock	1½
Nov.	1,	Eastern Texas Electric Company 5s, 1942....	2½
Nov.	1,	*Edison Electric Illuminating Company of Brockton, Capital Stock	2
Nov.	1,	*Fall River Gas Works Company, Capital Stock	3
Nov.	1,	Galveston Electric Company 5s, 1940.....	2½
Nov.	1,	Houghton County Electric Light Company, Preferred Stock, 6 per cent	3

*Payable quarterly.

	Per Cent.
Nov. 1, Houghton County Electric Light Company, Common Stock	2½
Nov. 1, Jacksonville Electric Company 5s, 1927.....	2½
Nov. 1, *Lowell Electric Light Corporation, The, Capital Stock	2½
Nov. 1, Mississippi River Power Company (Debentures) 6s, 1919 (Principal also due).....	3.73
Nov. 1, Paducah Electric Company (Debentures) 6s, 1939.....	3
Nov. 1, Pawtucket Gas Company of New Jersey, The, 4s, 1932.....	2
Nov. 1, Ponce Electric Company 6s, 1927.....	3
Nov. 1, *Public Service Investment Company, Preferred Stock, 6 per cent	1½
Nov. 1, Railway & Light Securities Company 5s, First series, 1935; Second and Third series, 1939; Fourth series, 1942; Fifth series, 1944; Sixth series, 1946	2½
Nov. 1, Seattle Railway Company, The, 5s, 1921.....	2½
Nov. 1, *Sierra Pacific Electric Company, Preferred Stock, 6 per cent	1½
Nov. 1, Whatcom County Railway & Light Company 5s, 1935.....	2½
Nov. 15, *Keokuk Electric Company, Preferred Stock, 6 per cent	1½
Nov. 15, *Tampa Electric Company, Capital Stock.....	2½

*Payable quarterly.

Dividend rates are based on last declaration.

Quotations on Securities

OF

Companies under Stone & Webster Management

OCTOBER 1, 1919

The Securities Department executes orders on commission for those wishing to purchase or sell.
Requests for information in regard to the companies will be answered promptly.

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Ab. & Rock., The El. Lt. & Pr. Co. of { Notes, July, 1923	7%	99½	No	Pref	8%	120
Baton Rouge Elec. Co. { Bonds, 1939 Notes, Jan., 1920	5% 6%	85 100	6%	80		.....
Blackstone Valley Gas & Elec. Co.	5%	92½	*6%	95		
Cape Breton Elec. Co., Ltd.	5%	83	6%	75	3%	25
Central Mississippi Valley Electric Properties	No	Bonds	*6%	40		5 N
Chicago, Wilmington & Franklin Coal Co.			*6%	90		100
Columbus Elec. Co. { Bonds, 1933 Notes, July, 1922	5% 6%	85 97½	6%	75		23
Columbus Power Co., The	5%	92		.....		.....
Connecticut Power Co., The { Bonds, 1963 Notes, Jan., 1920	5% 6%	90 100	*6%	83		
Connecticut Valley Lumber Co. { Serial Bonds June, '22-'34	6%	97½				
Eastern Texas Elec. Co. { Bonds, 1942 Notes, Aug., 1921	5% 7%	88 100	*6%	83	5%	60
Edison Elec. Illg. Co. of Brockton { Bonds, 1930 Notes, March, 1921 Notes, Dec., 1919	5% 5% 6%	100 100 100	No	Pref	8%	125
El Paso Elec. Co. { Bonds, 1932 Notes, 1920	5% 6%	91 99½	6%	85	10%	85
Fall River Gas Works Co.	No	Bonds	No	Pref	12%	175
Galveston Elec. Co.	5%	83		.....		.....
Galveston-Houston Elec. Co. { Notes, March, 1922	7%	99½	*6%	65 ^B / _L		15 ^B / _L
Galveston-Houston Elec. Ry. Co.	5%	85	No	Pref		.....
Haverhill Gas Light Co. (Stock par value \$50)	No	Bonds	No	Pref	9%	55
Houghton County Elec. Lt. Co. (Stock par value \$25)	5%	92½	6%	18	5%	12
Houghton County St. Ry. Co., The	5%	99	No	Pref	No	Com

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Houghton County Traction Co.	5%	85	*6%	40		5
Houston Elec. Co.	5%	96 ^B / _L		.....		.....
Jacksonville Elec. Co.	5%		No	Pref	No	Com
Jacksonville Traction Co.	5%					
Keokuk Electric Co.	6%	100	*6%	85		.....
Key West Elec. Co., The	5%	80		.....		.....
Lowell Elec. Lt. Corp., The	No	Bonds	No	Pref	10%	155
Mississippi River Power Co.	5%	78 ^A / _B		51 ^A / _B		13 ^A / _B
Northern Texas Elec. Co.	5%	83	6%	74 ^B / _L	6%	57 ^B / _L
Northern Texas Traction Co.	5%	92	No	Pref		.....
Pacific Coast Power Co.	5%	90	No	Pref	No	Com
Pensacola Elec. Co.	{ Bonds, 1931 Notes, Jan., 1921	5% 7%		50		5
Ponce Elec. Co.		6%	No	Pref		.....
Public Service Investment Co.	No	Bonds	*6%	74		20
Puget Sound Elec. Ry.	5%	85 ^B		.....		.....
Puget Sound Power Co.	5%	92	No	Pref	No	Com
Puget Sound Trac., Lt. & Pr. Co.	{ Notes, 1921	7%	*6%	55		13
Railway & Light Sec. Co.		5% 5% 5% 5% 5% 5%	95 92½ 92½ 91½ 91½ 91	*6%	83	6% 80
Savannah Elec. Co.	5%	60 ^B / _L				
Seattle Elec. Co., The	{ 1st Mortgage, 1930 Cons. & Ref., 1929 Seattle-Everett, 1939 The Seattle Ry., 1921	5% 5% 5% 5%	95 ^B 90 ^L 85 97	No	Pref	No Com
Sierra Pacific Elec. Co.		{ Notes, Feb., 1922	7%	98½	*6%	53
Tacoma Ry. and Pr. Co.	5%	80	No	Pref		.....
Tampa Elec. Co.	5%	93	No	Pref	10%	112
Whatcom County Ry. & Lt. Co.	5%	85	No	Pref	No	Com

Quotations are approximate. All stocks \$100 par value unless otherwise specified.

*Cumulative. †Ex-Dividend. A. Listed on London Stock Exchange. B. Listed on Boston Stock Exchange. L. Listed on Louisville, Ky. Stock Exchange. N. Common shares have no par value. X. Ex-rights.

**The Securities Department wishes to
bring to the attention of members
of the organization the following:**

**We do a general investment banking business and specialize
in the securities of companies under the management of our
organization and in the securities of companies which we
have investigated.**

**The resources of a large organization are at all times
available to investors who desire information concerning
investments or service in connection with the purchase and
sale of securities.**

STONE & WEBSTER

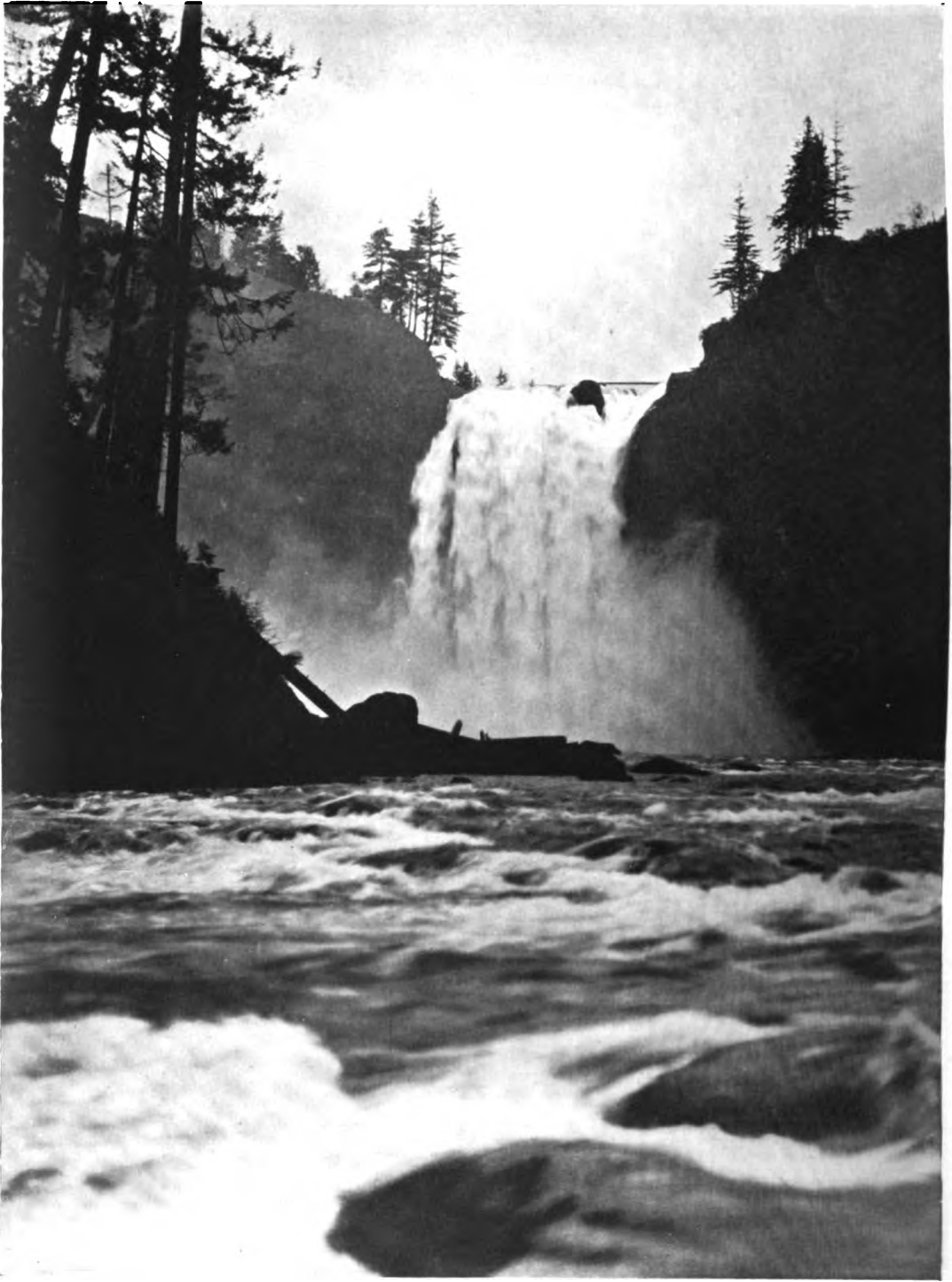
**Members of the organization are invited not only to
avail themselves of this investment service, but also to help
in broadening its usefulness by calling it to the attention
of others.**

Securities Department Offices at

**147 Milk Street
Boston**

**New York
120 Broadway**

**Chicago
1st Nat'l Bank Bldg.**



SNOQUALMIE FALLS

See "The Seattle-Spokane Transmission Line"

STONE & WEBSTER JOURNAL

NOVEMBER, 1919

EDITORIAL COMMENT

Rights and Obligations

A right without an obligation is as inconceivable as a purchase without a sale, a word without a thought, an object without space to occupy. The right to live, the most fundamental of all rights, carries with it the obligation to breathe and to eat; if one ignores the obligation he forfeits the right. Everyone is today stressing his rights, but multitudes are forgetting their obligations. It is a fatal mistake.

The Declaration of Independence says that all men are endowed with the inalienable right to life, liberty and the pursuit of happiness. Mark the words, "all men." They can mean but one thing, namely, that each man's right is contingent upon the right of every other man. This contingency, therefore, burdens every man's right with an obligation. He must exercise his inalienable right to life, liberty and the pursuit of happiness in a way not to impair the exercise of any other man's right to the same things.

The obligation to do this is more than a moral obligation; it is economic. The highest dictate of morality is that we should do to others as we would that others should do to us, but the mandate would be just as imperative if the ethical consideration were entirely eliminated. As a matter of pure expediency we must comply with this rule, in order to secure the exercise of our inalienable rights as members of the social organism. The social organism fails in functioning to just the extent that we divorce our obligations from our rights — what God has joined together man cannot safely put asunder.

The world is cumbered with the wreckage of such attempts. The German Empire, for example, claimed the right to a place in the sun, but forgot the obligation that was annexed to the

right; it invaded Belgium and not only failed to acquire additional sunshine, but lost a large part of what it had previously possessed. Another instance is the British corn laws, which were not repealed until the nineteenth century was almost half over. These laws, which were enacted in the interest of the land owners, kept the industrial population on the ragged edge of starvation, and necessarily retarded the industrial development of the nation. Both moral and economic considerations made their annulment imperative. Their vicious results are seen to the present moment, and in particular in the depression of British agriculture during the last half century.

Slavery affords another instance. The Romans were too proud to work. They multiplied their slaves, neglected the soil, flocked to the cities, infested the circuses, lost their stamina, and passed under the yoke of the Goths. We see the same thing in connection with taxation, which is one of the surest ways of impoverishing national life. The Roman emperors had the right to tax, but they ignorantly or viciously neglected the correlative obligation to tax wisely and justly. By their avariciousness they destroyed Greek culture and finally their own. By such means was ushered in that period, centuries long, which we call the Dark Ages.

Most of us know so little of the past that we cannot appreciate the fact that history is forever repeating itself. We cannot believe there could ever be another Dark Age. We claim that we are actuated by the highest moral and practical considerations, and that the results must necessarily be of the finest character. Nothing, however, calls for keener scrutiny than human motives. In no domain is there more chance for self-deception. Saul of Tarsus, for example, thought he was doing God service when he persecuted the Church, and he was quite as honest and intelligent as either Lenine or Trotsky in Russia, or any of the I. W. W. leaders in America.

Truth is very apt to be what we individually make it. We begin with predispositions, pass on to preconceptions, and end with policies framed in accordance with what we think would be personally agreeable to us rather than in accordance with what is attainable and for the best interest of all. In our minds we create rights for ourselves, with scant regard for the obligations which rights, in every case, impose upon us. Like children, we are full of hope and joy when we begin the attempt to enforce our assumed rights, only to be cast into dejection

and bitterness when some power outside ourselves — a law of nature or some fellowman — by interposing other and conflicting rights, brings us face to face with our obligations and makes us acknowledge and fulfill them.

A human right, therefore, calls for as clear thought as a mathematical computation. The analogy, indeed, is quite close. Experts, employing the laws of mathematics, so far as at present known, have compiled tables for use in finance and industry, and have saved us the trouble of figuring out a great many things for ourselves. In like manner scientists, generalizing from the most complete observations of highly equipped investigators, have promulgated laws in various fields of human activity (chemistry, physics, etc.), which we all accept as authoritative. If the same progress has not been made in the domain of human relationship, it is because the observations have not been so accurate, so disinterested, so impregnated with a sense of the binding character of the laws of nature governing such relationship. In mathematics and the physical sciences, man knows that he cannot contravene nature; do what he will, two times two are bound to make four, and the whole of a thing will never be anything but the sum of all its parts.

No such certitude exists in the mind of the ordinary man in connection with rights. In science great allowance has to be made for reactions. We can view no phenomenon alone, by itself; it has no value for us except as it is viewed in connection with other phenomena. An object would not be an object without the space which it fills; a chemical element would totally fail to interest us if it did not interact, either chemically or physically, with other elements, either in our stomachs in the form of food or medicine, or in manifold other ways whereby our lives are sustained and industry developed. If two parts of hydrogen did not combine with one part of oxygen, we should all perish of thirst, and it is only for such practical reasons that we care in the least about either hydrogen or oxygen. But rights and obligations are quite as much under the law of reaction as hydrogen and oxygen. Nature has arranged for the combination of her elements in a way to make human life possible and agreeable. They fit our need, and if they were arranged in some other way we should have to be transformed into an entirely different kind of being, provided we were allowed to exist at all.

Men and women, apparently unlike the physical elements, have the power of choice, which they too frequently exercise in senseless fashion. They have the right to live and they choose to exercise it in a way to deprive themselves of the finest benefits of the right. They have obligations contingent on all their rights, and these they obscure, or meet half-heartedly, or frankly disregard, thus vitiating the rights of which the obligations are necessary correlatives. It would be well for us if we paid more attention to the law of compensation. There is a quid for every quo, a loss for every gain, an obligation for every right. We can take no more than we give. A man may secure great booty as a thief, but he loses fully as much, either by being confined in jail or, what is quite as bad for him, by suffering a moral degeneration, of which some day he may be acutely conscious. Criminals, in fact, do not deceive themselves; they know when they consciously choose crime rather than rectitude that they are giving up one thing for another, the better thing for the worse.

There is a certain amount of energy in the universe, no more and no less than at the beginning, if there was a beginning, and no more and no less than there will be at the end, if there is an end. Energy changes its form, and that is all. If a pound of coal is consumed, the ash and gas resulting from the change will weigh exactly as much as the coal previously weighed — not a millionth part of a grain will be lost. Nature has stored the universe with energy and has provided that there shall be no diminution of the supply, but she has given man the right to transform its methods of operation. Man can use this energy wisely in enhancing his good, or unwisely in working his destruction. Similarly she has endowed him with rights in his relations with his fellows. These rights will, like the physical elements with which the universe is charged, if properly exercised, secure him comfort and happiness; if improperly exercised, they will draw down ruin on his head. Disregard of the obligations which inevitably attach to rights, signifies a misuse of the rights. Nature has stocked us with rights, which she has measured in terms of obligations, and left us to exploit them as we will. If such is our humor, we can use them to our destruction and turn this world into as stark a region as the Desert of Sahara. While nature will lose nothing by the occurrence, man will lose his birthright and be resolved back into the elements from which he sprang.

The present is a fateful era. All over the face of the earth men are proclaiming rights as they have never proclaimed them before, many of these rights having for their ends conditions unrealizable by any law of nature so far discovered, contravening, in fact, the very instincts of human nature itself. In the attainment of these putative rights, there is a disposition to discard experience, though experience, if not a perfect guide, is at least the only guide the race has ever had. If this course should be pursued for any length of time, the race would find itself involved in fratricidal strife; this would certainly be the case if rights were pressed with insufficient regard for obligations. Every man claims the right to work. Automatically this obligates him to admit the right of every other man to work with as much freedom as himself. If he refuses to admit the obligation, or if he admits it in theory and refuses to live up to it in practice, he contributes to the making of a new Dark Age. There is nothing new under the sun; certainly not in this particular.

Longer Years and Shorter Hours

His golden locks time hath to silver turned
 O time too swift! O swiftness never ceasing!
 His youth 'gainst time and age hath ever spurned,
 But spurned in vain; youth waneth by increasing."

A distinguished surgeon, Dr. Mayo, tells us that we all die too soon. There is no reason why at least ten, and possibly fifteen, years should not be added to the average life of man.

In his own words: "Since the end of the Civil War fifteen years have been added to the average length of human life. With present knowledge and present conditions fifteen years more might be added to the life of man in this country within the next twenty years. It is certain that ten years will be added at the most productive age from the standpoint of industry." Note the last phrase. It postpones for ten years the period so aptly described by George Peele more than three hundred years ago:

"His helmet now shall make a hive for bees,
 And lovers' songs be turned to holy psalms;
 A man-at-arms must now serve on his knees,
 And feed on prayers, which are old age's alms."

How very comforting! But the best is perhaps to come; for Dr. Mayo further declares that, "If as a nation we advance the time of production of each person, we can well afford to

shorten the hours of work and improve living conditions, and we shall be able to compete with those countries in which long hours and poor living conditions shorten human life and eventually decrease production and increase social unrest.' That is, we shall all be doubly blest. We shall live at least ten years longer, and during the whole of our lives we shall work fewer hours than in the past.

Some things seem too good to be true. We are afraid there is a fly in this ointment. Try as we may, we are not able to see how a man who is told that he is going to live ten years longer than he had any right to expect is going to derive any monetary value from the fact in the immediate present. He may be able to capitalize the added ten years for the benefit of his children, but we fail to see how he can capitalize them for his own benefit. Man lives by the labor of the moment and not by the labor which he may perform ten years hence. Of course, if some friend or neighbor is certain that the man will actually live the ten years and be fairly productive up to the limit of them, he may be willing to make him a loan against the proceeds, but instances of that sort are not going to be frequent enough to make it worth while to dwell on them. Besides, even if he could find anybody who would lend him the money, the world would be no better off. In fact, it would be worse off, because the loan would be based upon the productive capacity of today, and not in the least on that of tomorrow or the next day or ten years hence, which would mean that some other person's, indeed, a great many other persons', share of the things we live by today would be lessened in order that the man we are talking about might have more. On his part it would be a grab game, or everyone for himself with the devil taking the hindermost.

Richard Cobden once said: "The government which keeps close to morality in its political dealings will find itself in the long run most close to the nature of things, and to that success which rewards conformity to the nature of things." This will be equally true if for the word "government" we substitute the word "individual," and for the word "political" the word "industrial." It is always wise to keep an eye on the nature of things. Even Mother Jones, who is making speeches to the Bolsheviks, said the other day, "God Almighty never made a man that could stop a woman talking." We are not particularly concerned about that at this writing (we are twenty miles away from all the women of whom we are in the least afraid), but

the remark is interesting as showing that even untutored minds are not altogether oblivious to the nature of things. The trouble is, some persons (perhaps most persons) see the nature of only a few things and fail to note how these few things are related to a great many other things they do not see. If Mother Jones had studied man as closely as she appears to have studied woman, her remarks would possibly be of more value to the world.

Most persons in middle life will recall Darius Green, who swore that he could fly and made a flying machine to prove it. Unfortunately, he was not very close to the nature of things, and the result was melancholy. The Wright brothers, Curtis and others, have since Darius' day got pretty close to the nature of things, and the flying machine is now an accomplished fact. A dog once crossed a brook on a plank with a bone in his mouth, and on looking into the water thought he saw another dog with a bigger bone, and proceeded in haste to drop his bone in an effort to seize the other. Unfortunately, he was not very close to the nature of things.

There was once a prophet called Balaam, and there was a king called Balak, and Balak told Balaam to go out and curse the enemies that were advancing upon him. But God told Balaam to do no such thing. However, Balaam, prodded on by Balak, ventured forth on the errand. The ass on which he rode was closer to the nature of things than he, and at a certain stage in the journey refused to budge; though Balaam laid his cudgel on him. Then the Lord opened the eyes of Balaam and he saw the angel of the Lord standing in the way with his sword drawn in his hand. Thus Balaam got close to the nature of things. Some will say the story is apocryphal, but there is often a world of meaning in apocryphal stories.

A learned scientist stood up in a gathering of scientists the other day and read a paper showing that Newton did not know what he was talking about when he proclaimed the theory of gravitation. This gentleman, by the way, is not the first who has made this charge, yet we suspect that none of us will take any chances, but will be governed pretty closely in our actions by Newton's law, so called. It is not so many years ago that Brother Jasper used to stand up in meeting and vehemently declare that "The sun do go round the earth," but most of us are still prone to believe that Newton and Galileo were a good deal closer to the nature of things than the ordinary man.

We recall an American politician who some years ago tried to get into office by denouncing a theory of government that was approved by the majority of the people. One of our funny journals printed a cartoon representing a single track railroad, with the politician in question disclosed as a billy goat between the tracks, head down, prepared to butt a magnificent railroad train advancing toward him at full speed, with the name of the issue to which a majority of the people were committed written large on it. Underneath were the words, "Willy, we admire your pluck, but damn your judgment!" The cartoon was a trifle profane, but the politician deserved it for not getting closer to the nature of things.

Nature is the stiffest proposition we ever have to face. She is very accommodating, and if we will do things her way we shall find her treating us better perhaps than we deserve. But she is very sensitive and will not brook interference, and most of all she does not like to have her judgment questioned. Now it is a direct insult to her to declare that we propose to take the things she has arranged for us to have tomorrow and consume them today. If our ears are sharp we may hear her exclaim, "I will see to that." We may as well give over the attempt. It cannot be done.

You cannot consume what you have not got. A man on five dollars a day may, perhaps a great many do, sit down and flatter himself that ten years from now he may be as rich as Croesus and hope to indulge every pleasing fancy. But that is not going to pay today's rent, or put food into the mouths of his wife and children or clothes on their backs. He has got first to catch his hare before he cooks it. If a man works eight hours a day producing goods for the community's use, one does not have to be very close to the nature of things to know that if he works only six hours a day he will not produce as many things as he did in eight hours, to exchange for the things that other people produce. That is, unless he works a good deal more efficiently in the six hours than he did in the eight. We have yet to learn of anybody who wants to work any harder than he is working now.

We live by swapping what we produce for what other people produce. In these days no one lives wholly, or in any considerable measure, on the things that he himself produces. Most of his consumption is of things that other people produce. If everyone else as well as himself is working less time, the sum

total of production — the great reservoir from which we all draw our subsistence — will be of smaller dimensions; that is, as we have just remarked, unless everybody accomplishes as much in the lessened time as he did in the previous longer time. What we are afraid of is that everybody won't, and if they won't and if they don't the world will be in a very sad plight. Perhaps that is a Yankee way of looking at it. Personally, we do not like to part with a good thing unless we are quite certain we are going to get a better by so doing, and in this case the probability is not strong enough.

We do not live on air but on what we take out of the ground and out of the water. You may tell a farmer who expects to die at sixty that he is going to be a hale and hearty man until seventy, but the added ten years are not going to make him work less hard today. The only economic advantage he would derive from the fact is, that if he could live ten years longer and save as much in each one of those years as he is saving now as a result of his work, he would have more to retire on at the end of the period. But all he has now is what he has now. He will not have tomorrow's gain until he has worked and got it, and it does not look as if it will be easier for him to get it by putting in fewer hours today. Our reasoning may be all wrong, and if so we shall be glad to have the error pointed out to us. Hope never fed an empty stomach; only work can do that; and the more the work, the more there will be to put into the stomach.

Walt Whitman says: "I loaf and invite my soul." A good many other people think they would like to do the same thing, but the chances are that they do not want anything of the sort. They want to loaf without inviting their souls. Loafing is an excellent thing when one employs his loafing in inviting his soul. Just here we find we are involved in a contradiction of terms. Can you use the word "employ" in connection with loafing? Employ means work, and loafing that implies work is not loafing. What Whitman means is that he takes time to cultivate his soul. That may seem easy work, but as a matter of fact it is the hardest work that a man can engage in.

When a man cultivates his soul he discovers a good many surprising things. He discovers, for instance, that the soul is a hard task master. It says, "You do the things I tell you or I will quit." A good many of us have experienced that and it is not a pleasant thing to happen to one. The soul says to each of us, "Get out and work your hardest." Some of us think that

what the soul wants us to do is to go out and lie on the grass and watch the birds. But the soul says, "You can do that if you do a few other things that are not quite so agreeable." It says, "You are here to do as much for other people as for yourself; if you don't, other people will suffer and I will see that you suffer too." A man either wears out or rusts out, and it is better to do the former than the latter. If a man will not work, his soul will rust out, and he might as well be dead as alive. Lying on the grass and looking at the birds is invigorating if we do it in moderation; it is debilitating, in fact, killing, if we do not employ moderation.

Nature looks with approval on our attempt to prolong our lives; but she is a good trader, and says you cannot have something for nothing. One thing nature flatly refuses to do: she will not hand us out our pay checks in advance. She pays for the work we have done, and not for what we are going to do.

We agree with Dr. Mayo that it is a good thing to have ten years added to our lives "at the most productive age," chiefly because it will set farther along in life the period at which the young generation will, out of its labor, have to support the older generation in comparative idleness, the result being that the younger generation, if it is disposed to save at all, can save ten years longer than would otherwise be the case. Thus the productive capacity of each generation would be somewhat increased beyond the present point, which would be a decided advantage. But it would be the easiest thing in the world to lose the advantage if both the younger and the older generation should take too keenly to loafing and inviting their souls. The only positive gain that can come to the world from adding ten years to the life of the average man is from everyone working the ten added years while producing as much as he is producing today, to say nothing of more.

A man is thinking productively when he looks after his health and allows himself sufficient time for rest and recreation. The thing is to discover what constitutes "sufficient time." Richard Cobden, to whom we have already referred, wrote at the age of thirty-four to a friend: "Both you and I must not omit reasonable precaution; we are not made for rivalling Methusaleh, and if we can by care stave off the grim enemy for twenty years longer, we shall do more than nature intended for us. At all events, let us remember that to live usefully is far better than living long." Instead of living twenty

years more Cobden lived twenty-seven, which would make him sixty-one when the grim enemy got hold of him. But sixty-one seems young today, which proves the truth of Dr. Mayo's statement that since the Civil War we have added fifteen years to our lives.

We must confess that we are interested in Cobden's statement that to live usefully is better than living long. He had loafed and invited his soul long enough to discover that fact. The soul, as we have said, is a hard task master. It seems to prefer quality to quantity. We should be quite content if we could feel that we were all going to live ten years longer than we had expected and were all going to work fewer hours a day, if by so doing we were going to improve the quality of our lives. But the person who is improving the quality of his life right along is apt to want to work harder rather than easier.

It certainly is a paradoxical situation. We say we want more time to cultivate our minds, but when we take it in serious earnest our minds set us new and harder tasks to perform and tell us that if we do not perform them it will be worse for us in the end. On the whole, we are disposed to think that we shall all make a mistake if we decide to live longer and ease up, without at the same time paying our debt to nature by producing better work in the shortened time. We have got to make good, or step down and out.

WAR AND PEACE DEMANDS ON THE ELECTRIC LIGHT AND POWER INDUSTRY*

BY H. J. GILLE

Since our last annual convention in Spokane, the greatest war in the world's history has been ended. Millions of men, women and children have been sacrificed, wounded, maimed and left destitute. Untold wealth has been squandered; unlimited property destroyed. Bitterness and hatred have been engendered between nations and the peoples of nations that will take generations to heal. The political, economic and social life of the world has undergone changes that have become a part of the readjustment that is now going on.

Every industry contributing to the vast wealth and the great resources of our country has been taxed to meet the demands of the Moloch of war; our own, among the others. We have sent our men and women from member companies overseas to fight. Some of them — most of them — have returned, but there are those others whose eternal sleep came to them while in the performance of their duty, and who have earned their rest on the war-torn fields of France and Flanders, where the poppies of brilliant hues mock at the sacrifice.

All of the heroes of the great conflict were not those who were called to support the colors on the battle fields, but there were others who stayed behind to carry on the work that had to be done for the successful prosecution of the war. There were those physically unfit for the army or navy, but whose spirit of patriotism was strong, and whose bit was rendered with a faithfulness equal to those who by virtue of youth and fitness were drawn into the slaughter holes of a foreign country. They took on all of the burdens that were imposed by an extraordinary condition, and met their obligations in the same spirit of self-sacrifice that marked all of the loyal Americans in their support of America in the fight.

Upon no industry were the demands of the war laid with a heavier hand than upon ours, and no industry responded more promptly, more earnestly, or more efficiently. The first demand was the call for men. The engineers and experts who

*Presidential address at the Convention of the Northwest Electric Light and Power Association, Seattle, September 24, 1919.

had been trained in the public utility industries of this country responded splendidly, and the technical services which they were able to render to the country were invaluable. Whether behind the lines, building docks and warehouses, constructing railroads, telephone or electric systems, or in the front line establishing lines of communication, and planning and constructing trenches and bridges, they never wavered.

The second demand was for adequate street railway transportation, electric power, more electric power, and still more electric power, and this demand was also met by the utilities to its fullest measure.

The public which had for many years been taught that the combination of capital necessary to successfully and economically develop the large public utilities of this country was somewhat of a menace, were suddenly awakened to the fact that it was only by reason of the existence of such development that the tremendous construction necessary to successfully prosecute a great war, was possible. Shipyards sprang up almost over night. Large machine shops and other war industries demanding large blocks of power came into immediate existence, and yet this extraordinary demand for electric energy was everywhere in this section successfully met. Nor is there a single record of any electric light and power company seeking in the slightest measure to take advantage of the country's abnormal needs to secure an abnormal profit. With the prices of every other commodity advancing by successive upward strides, the prices of electric energy remained practically stationary, despite the large increased cost in production and labor.

I am firmly convinced that this is generally realized and deeply appreciated by the public, and by the communities in which we operate; but whether it is or not, we in the industry have that deep personal satisfaction which comes to every man when he knows that he has been confronted with a patriotic duty and that he has fulfilled that duty unselfishly and devotedly.

Along with the other questions that have profited by the experiences of the past two or three years is that of standardization and equipment. Lamps and appliances have been brought up to a spirit level of quality that would have taken years to bring about, had not necessity compelled. And at the same time much that has been worthless and unnecessary, in the way of appliances and equipment, has been scrapped, and

such machinery as was employed in the manufacture of our own necessities has turned out goods with the hall mark of quality, benefiting the electrical industry.

One of the peace-time problems confronting us today is that of the development of business to employ the energy released from the needs of war production; the development of the great industrial opportunities on the Pacific Coast, and particularly in the Pacific Northwest, in the market of its natural resources. Industrial research for developing industries employing electricity as a motive power should be vigorously prosecuted. I realize that few individual companies, except the large ones, can afford to engage competent investigators for this purpose, and it might be wise for the association to undertake this work along broad lines, for the benefit of all member companies. I also realize that this would be taking up work not contemplated when this association was formed, but associations must conform to revised conditions, in the same way that a corporation or an individual must.

Chambers of commerce, commercial clubs, associations of manufacturers, jobbers and dealers, should co-operate with the central station companies in the different communities in working out such a community plan encouraging the location of new industries. A secretary employed for this purpose, who would give his entire time to the office of the association, might be a solution of the problem.

The increase of our business also increased our problems, and the same is true of the business of the manufacturers, jobbers and dealers in electrical equipment. We should keep in close touch with them, and help work out their plans. Our association should also keep member companies informed on all matters relating to rates; have a representative attend rate hearings before the Public Service Commission, furnish data and assist in working out rate problems. Among other serious problems today are the high cost of labor, material and money. These items, plus taxes, fix our cost of furnishing service. The rates for our service are fixed by public commissions; these commissions cannot fix the prices we must pay for wages, material or money. If these items did not change in value, then rates once fixed could remain in effect, except for changes in load factor and class of business, which materially affect the cost of service.

During the past four years there have been changes in the

cost of these items which have greatly affected our ability to furnish service at the pre-war or normal rates, and unless there is a speedy change in these conditions it is going to be absolutely necessary that an adjustment of rates charged by the public utilities be made to conform to these increased costs of labor, material and money.

The Bureau of Labor Statistics of the United States keeps a record of wholesale prices of 240 commodities, grouped under nine heads. The average index number in 1913 was 100; in April, 1919 it was 203. In other words, the wholesale prices of 240 commodities have more than doubled since the date of the first record.

For some reason the price of electricity for light and power is not included in this list of commodities, probably because it is included under the class of service. If, however, an index number showing the movement of light and power rates were available, and could be compared with the commodity price movement, a very striking difference would be observed, as even in the few cases where rates have been increased, it was only a fraction of the commodity rate increase.

If 100 represented the normal in 1913, the average light and power index number today, for all member companies would probably not be more than 115. Our customers who produced these commodities which have increased tremendously in price have benefited by increased profits. In the meantime our own net earnings have not been increased. This statement is made in the face of greatly increased gross earnings, due to increased business, but the business extensions have compelled large additions to our plants and at very high construction costs.

The present situation is confusing, not to us alone, but to the men who constitute the regulating bodies, and it is difficult to form an idea of what the future necessities may be. If rates for our service could be fixed by an index number that would take into account all items of cost, it might be a comparatively simple matter; but we have no such method. We must, therefore, approach the situation by taking each individual case, and work it out with the regulating bodies, as it becomes necessary to further develop our properties, make extensions and maintain a high quality of service.

The furnishing of power for the operation of railroads is a problem that confronts all of the power companies on the

Pacific Coast, as well as the inter-mountain companies. In a period of less than 15 years the manufacturers of electrical equipment have perfected motors for heavy duty, as well as for high speed, capable of handling the heaviest trains over railroad lines having the most difficult grades. The Chicago, Milwaukee & St. Paul Railway has something over 400 miles of electrified lines in operation in Montana, across the Rocky Mountain range, the power for which is being furnished by the Montana Power Company, and the Milwaukee management will place in operation something over 200 miles of electrified lines across the Cascade Mountains, in the Western Division, in the State of Washington between Othello and Puget Sound, within a short time.

The power for the Western Division will be supplied by the Washington Water Power Company, on its eastern end, and the Puget Sound Traction, Light & Power Company on the western end. The success of the operation of the Rocky Mountain Division is well known. At a recent hearing before the Interstate Commerce Commission in Portland, evidence was presented showing the economy of electrical operation. The testimony was based upon the authority of comparative records of steam and electrical power, and went into the question in detail, a summing up of which would tend to show that the proportions were 408 to 524 in favor of electricity. The figures were adduced upon a 1,000-ton mile.

The success of railroad electrification is assured, and there is small reason for doubt that in a comparatively short time many of the railroads in the United States will be operated with electric power. The character of the power load for operating a railroad is somewhat intermittent and can be furnished cheaper by a power company on account of a diversified load for light and power, than by a separate power plant. It is, therefore, of the greatest importance that we co-operate with the railroad officials in every way in the working out of economical and reliable power supply.

In the matter of co-operation between Central Station companies, manufacturers, jobbers and dealers, we cheerfully acknowledge the success of the plan developed by our neighbor, the Pacific Coast Section, and I am convinced that a similar plan should be worked out in the Pacific Northwest. Much good has been accomplished so far in this direction through the efforts of Mr. W. L. Goodwin and Mr. S. A. Chase, and I

would recommend that a committee of this association be appointed to work with the manufacturers' and jobbers', as well as with the contractors' and dealers' associations, to bring about practical co-operation on the part of all interests for developing the industry.

Our industry, even outside of its engineering and technical branches, is highly specialized, and our greatest need at this time is for men properly qualified and properly trained in its various branches. While it is theoretically true that merit and ambition must eventually rise to the top, it is also true that opportunity plays a large part in a man's development. The electrical industry has had a marvelous development by reason of the ability and breadth of vision of the men who have been connected with it. The accomplishments of these men were not accidental, and their opportunities were not a matter of chance, but resulted from their ambition to do one certain thing, in one certain branch of the industry, coupled with the ability of their superiors to seek out and recognize their qualifications. Along that line it is the absolute duty of every manager, and every head of department, to personally ascertain what the particular ambition of every subordinate is; to then determine if he is qualified along that particular branch, and if so give him the opportunity of developing himself, even to the extent of giving him the chance to increase his knowledge along such lines. It is only by these means that men with particular ability can be found, and when found, properly trained to take the places of those who are now doing the work, and carry on.

I am not dealing with the old hackneyed theory of "Better Relations between Employer and Employee," but am trying to drive home the realization that in every plant practically every employee has a certain definite ambition, a certain definite ability, and he must be encouraged to make this known to his employer. It is the duty of the management to ascertain what this is, and it is equally the duty of the employee to make his ambitions known. When the opportunity for advancement presents itself he must bring these ideas and these ambitions to the attention of his employer, and should then be given the opportunity to show just what he can do. Instead of it being necessary, when a position is open, to seek a man for the place, the employer should know absolutely the men already in his service who are ambitious, and who are qualified to tackle

just this sort of a position. Every man has an inborn desire to be someone, to express his own individuality; and if he is placed and retained in a position for which he is not fitted, his natural ability and his ambition are smothered within him, and his interest in his work is determined only by his pay check and the hour of quitting time.

If I could feel that by this address I had aroused in the breasts of every manager and every department head here the determination to return to his particular plant resolved to become better acquainted with his employees, their ambitions, their hopes and their ability, coupled with the resolve to give each such man the opportunity of developing himself along the lines for which he is best adapted, I should consider that alone to have more than compensated me for the work and duties which have evolved upon me as president of the association.

An amendment to the constitution of the National Electric Light Association, adopted at the Atlantic City convention of this year, is of a helpful nature and encouraging to the members of the section organizations in respect to financial obligations to the National Association. Prior to the passing of the amendment, the practice had been to collect a convention fund from member companies, based upon the light and power business of the companies. This fund was absorbed by the National Association, which retained all of the dues thus collected. The amendment provides for the return of one-half of the amount thus collected to the geographical sections.

The report of the activities of the Hydro-Electric and Technical Committee will be found decidedly interesting when presented to you, as it will summarize the committee's work for the past year, including a discussion of the National Electric Safety Code now being revised by the United States Bureau of Standards, under the direction of the Executive Committee of the Northwest Association, in anticipation of its adoption by the Public Service Commission of the State of Washington.

The report of the committee will also show a following of the whole technical situation, under a plan originated by the committee a couple of years ago, whereby the Northwest Electric Light & Power Association has secured representation on all technical committees of the National Association. In consequence our Association will be able to protect the interests of its geographic section in all construction and manufacturers' standards. Still another feature of the report will explain the

investigations of the same committee on general inductive interference in the northwest. This paper and its discussion should be followed by every member present.

I could not bring my remarks to a close without referring to the passing of Harry Bleeker, a past president of this organization who was "one of the heroes left behind," and who was with us on the occasion of our last convention in Spokane. He was possessed with unusual qualities as a business man and an organizer. His intimates knew him for his readiness to understand and sympathize. His never-failing fund of humor went far to brighten up the dark places in an active business career, but he was never too busy to give counsel to those who sought it from him, and his hand was always outstretched to the fellow who needed help. He was known to most of us of this Association, and we are going to miss him.

I wish to thank the officers of this Association, and the members of the executive committee who have given of their time and talents during the past year, and to acknowledge their assistance. For my own part I have been only a private in the great army of industrial agents who have sought to aid our government when it was calling for help to prosecute the war. The cessation of hostilities brought with it plans for reconstruction and readjustment, and to the successful prosecution of these plans every individual connected with this industry must bring the same intense application and earnest endeavor which he applied during the crisis of the War's demands. This is not the time to ease off. From an industrial standpoint the reconstruction period is even more critical than the war period, and our business can only continue to prosper through the untiring efforts and thorough co-operation of the men connected with it.

THE SEATTLE-SPOKANE TRANSMISSION LINE

BY G. E. QUINAN

At five minutes past four, on the twentieth of August, the closing of a switch at Snoqualmie Falls wrought another of those miracles, which in this day of marvels we scarcely pause to wonder about. At that instant the wheels of industry of three states were drawn into perfect rhythm, as the waters of the Walla Walla, Spokane and the Naches united their effort with the rivers of Puget Sound. To use the vernacular, Snoqualmie had synchronized with Long Lake, and approximately 1,500 miles of transmission lines had been interconnected, extending from the eastern borders of Idaho to Olympia, and from Pendleton, Oregon, to Everett.

The closing of this switch was merely the final incident marking the completion of work which has been in progress for over two years, for supplying electric power to the trains of the Chicago, Milwaukee and St. Paul Railway, between Othello in Eastern Washington, and Seattle and Tacoma, about two hundred miles of road.

In supplying this power 28,000 horse power of water-driven generators will be used, about equally divided between the Long Lake plant, of the Washington Water Power Company, near Spokane, and the Snoqualmie plant of the Puget Sound Traction, Light & Power Company. These stations feed into the transmission lines of the Intermountain Power Company, which connect at Taunton and Cedar Falls with the transmission line of the Railway Company, which with one or two exceptions, follows the Railroad right-of-way. Eight substations, spaced about twenty-five miles apart, make the necessary change from alternating current at 100,000 volts to 3,000-volt direct current, for the electric locomotives. This interconnection brings together in one electrical system, generating plants of the Washington Water Power Company, the Pacific Power & Light Company, and the Puget Sound Traction, Light & Power Company, having a total capacity of 298,100 horse power, with an additional 62,500 horse power in the Municipal plants of the cities of Seattle and Tacoma, connected at times.

The plants of the Washington Water Power Company are all located on the Spokane River; the Post Falls plant of 15,100



LONG LAKE PLANT OF THE WASHINGTON WATER POWER CO., 65,000 HORSE POWER CAPACITY



LITTLE FALLS PLANT OF THE WASHINGTON WATER POWER COMPANY, 27,000 H.P. CAPACITY

horse power, near the Idaho line; the Monroe Street plant, in the heart of Spokane, 10,700 horse power; the Long Lake plant, 70,000 horse power, twenty-four miles west of the city; and the Little Falls plant four miles below Long Lake, 26,800 horse power.

Interconnection with the Pacific Power & Light Company is accomplished at Lind, by means of transformers connected to the Intermountain Power Company's 100,000-volt line, which step down to 60,000 volts for transmission to Kennewick, about sixty miles, which is the nerve center of the Pacific Power & Light Company's transmission system. Plants of this company are located on the Walla Walla River, just over the state line in Oregon; on the Tucannon River, near Pomeroy, Washington, and on the Naches River, west of North Yakima. In addition to their hydro-electric plants, they have a number of steam plants at Kennewick, Walla Walla and elsewhere. The combined capacity is 20,800 horse power, of which 4,800 horse power is steam and 16,000 horse power is water.

A novel and interesting plant of the Pacific Power & Light Company is the Drop Plant, located at a point of fall in the flume line, which carries water from the Naches River to their main generating station at a point further down. This plant is one of the first of a type which may be expected to become more common for economically utilizing small amounts of water power, which now are usually allowed to go to waste. The building for this plant has been made as small as possible and the cost kept down in every way. The equipment consists of a water-driven induction type generator, constructed to withstand runaway speed without injury. No attendant is stationed at this power house, the turbine runs under a constant supply of water, and the generator can be thrown on or off the bus of the main generating station further down, by the operator there, through remote control switches. Capacity of the plant is 1,866 horse power. The stiff leg steel derrick, shown in the photograph, is for the purpose of handling the generator and wheel through the hatch in the roof. The concrete-lined stilling pool is shown in the foreground.

The transmission system of the Puget Sound Traction, Light & Power Company consists of 432 miles of 55,000-volt line, extending from Olympia to Everett, with an additional 134 miles in Whatcom and Skagit Counties, separated from the lines of the Seattle Division by a gap of 30 miles between

Everett and Mount Vernon. The plants of this Company are located at Electron, Dierringer and Snoqualmie, aggregating 114,670 horse power, with steam plants at Tacoma, Seattle and Everett of 40,000 horse power more. The Bellingham Division of the Company generates 2,400 horse power on the Nooksack River, and has a 4,000 horse power steam turbine in Bellingham. In addition to this, about 7,500 horse power is purchased from the Western Power Company of Canada, from the latter's plant at Stave Falls.

By closing the gap between Everett and Mount Vernon, 135,400 horse power of generating capacity would be added to the 298,150 horse power now interconnected, consisting of 90,000 horse power from the British Columbia Electric Railway Company, 89,000 horse power from the Western Power Company of Canada, and 6,400 horse power from the Bellingham Division of this Company. This would bring the total transmission line mileage up to 2,000 miles.

With the completion of the electrification of the Railway Company's western lines by building from Avery, Idaho, to Othello, Washington, the great transmission and generating system of the Montana Power Company, consisting of over 2,000 miles of line and 200,000 horse power of generating capacity will be added. While it is possible that this work will not be immediately undertaken, it will probably not be long delayed.

Within the next few years, it is safe to predict, that most, if not all, of the following work will be done:

The building by the Idaho Power Company of sixty miles of line to tie together the East and West divisions of their system, and the construction of a line to a connection with the lines of the Washington Water Power Company, near Pullman, Washington. This will bring into the Northwest network the systems of the Idaho Power Company, and the Utah Power & Light Company, with 224,100 horse power of generating capacity, and 1,000 miles of transmission line.

The building of thirty miles of line between Everett and Mount Vernon, by the Puget Sound Traction, Light & Power Company, which as before stated, will bring in the systems of the Bellingham Division of this Company, The Western Power Company of Canada and the British Columbia Electric Railway Company.

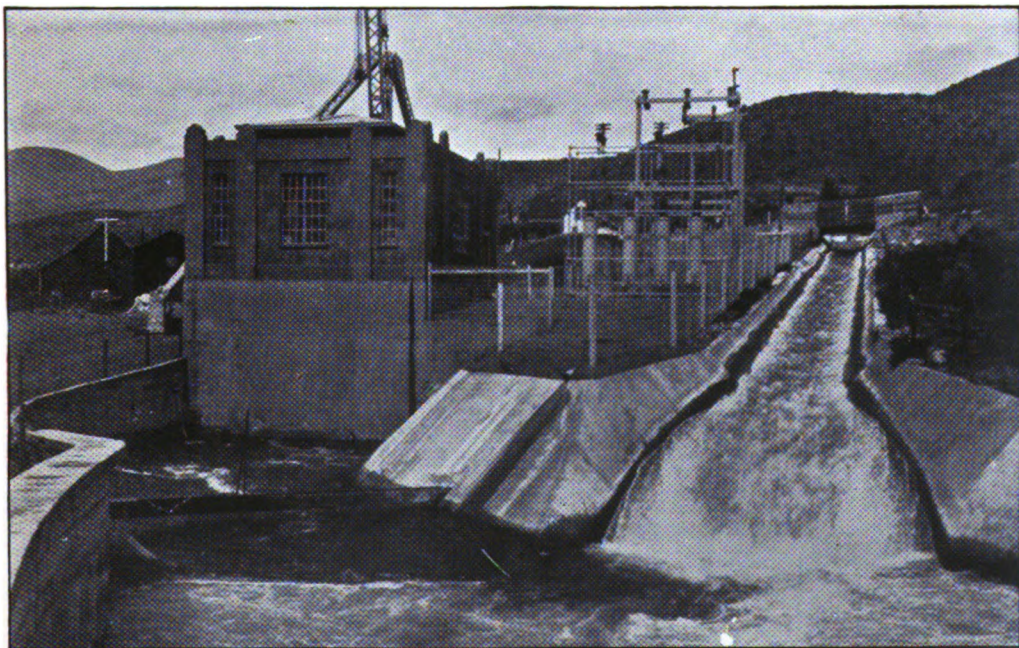
The construction by the Pacific Power & Light Company,



GATE HOUSE AND PENSTOCK, LONG LAKE PLANT



TYPICAL LINE CONSTRUCTION INTER-MOUNTAIN POWER CO. NOTE TELEPHONE WIRES ON LOWER CROSS-ARM



"DROP PLANT" OF PACIFIC POWER & LIGHT CO.

of a line connecting their Hood River properties in Oregon with their main system in Washington. This could be accomplished and has been contemplated by means of a 125-mile line from Kennewick to White Salmon. As this Company is now supplying power to the Northwestern Electric Company at White Salmon, and the latter is interconnected with the Portland Railway, Light & Power Company's system in Portland, a total of 148,650 horse power and 630 miles of transmission line would thus be added to the Northwest network.

With the completion of work as outlined above, it would only remain to construct two short lines, one in Central Oregon, and the other near Fresno, California, to complete the electrical interconnection of lines extending from San Diego to Vancouver, British Columbia, and from Puget Sound to Eastern Montana, 1,800 miles from north to south, and 1,000 miles from east to west. The total mileage of transmission lines would be approximately 12,000 miles, and the generating capacity more than 2,000,000 horse power.

While it is entirely probable that the lines of the Pacific Coast and Rocky Mountain states will be generally interconnected in the next few years, it should not be thought that this would make possible immediately a general interchange of power in considerable amounts. The capacities of the first interconnecting lines and transformers will probably be relatively small, and interchanges are likely to be limited to Utilities whose properties are adjacent.

In time, however, it may be expected that the tendency will be toward the establishment by the Utilities of heavy connecting trunk lines, over which general exchanges of power may be accomplished on some commercially equitable basis. There is evidence now of a lively interest in this matter, and some of the problems involved have already been worked out in California, and to a lesser extent in other states.

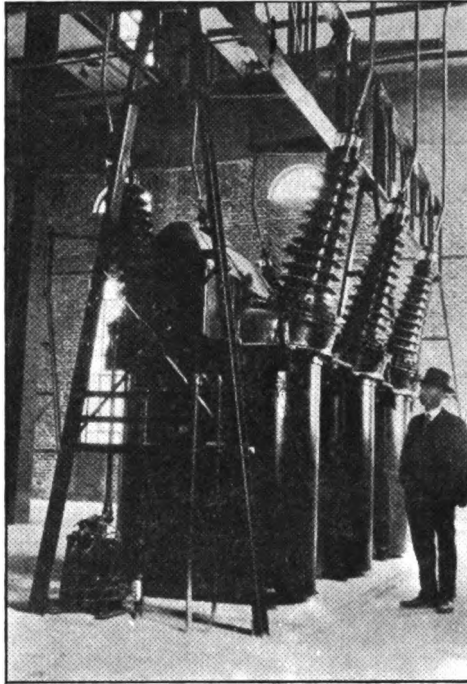
But to return to our subject, the Railway Company, as already explained, purchases its power, delivered to its own transmission line on the railroad right-of-way, and distributes it at 100,000 volts to its eight substations. The power is purchased from the Intermountain Power Company, a Washington corporation, to whom it is sold by the producers at Long Lake and Snoqualmie respectively. A low rate is earned because the power is bought at the generating station bus, thus eliminating

the heavy transmission and distribution costs. The Intermountain Company gives the Railway Company the benefit of its diversity for the whole 200 miles of road. That is, it charges the Railway Company only for the highest demand made at any one time, and not for the sum of the highest demands registered at Long Lake and Snoqualmie. To make this clearer, suppose the Railway Company operated only one train a day; starting from Seattle in the morning, it might draw 2,500 kilowatts from the Snoqualmie plant, with, say, 500 kilowatts from Long Lake, making 3,000 kilowatts in all. In the afternoon the same train would be in Eastern Washington, and might draw 2,500 kilowatts from Long Lake, with 500 kilowatts from Snoqualmie, a total, as before, of 3,000 kilowatts. The sum of the demands on the power plants would be 5,000 kilowatts, but the highest demand by the train at any one time was 3,000 kilowatts, and this is the amount for which the Railway Company would be asked to pay.

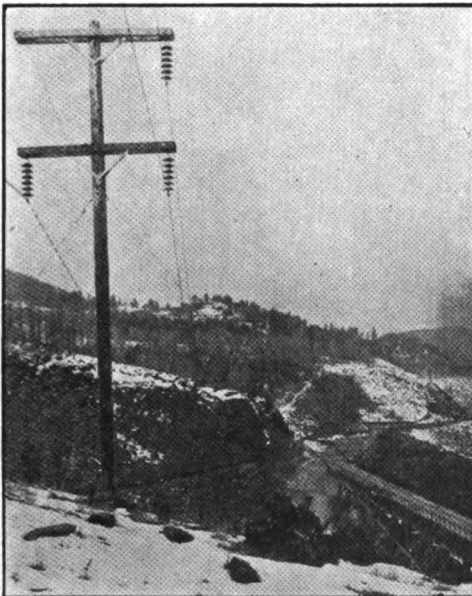
The Railway Company, therefore, pays less to the Intermountain Company than it would have to pay if it dealt directly with the producers. As a matter of fact, the Intermountain Company purchases about twice as much power as it sells to the Railway Company, and will lose money until further electrification takes place. When this happens, and it will not be many years hence, the Intermountain Company will be able, because of diversity between its different customers, to supply twice the present mileage, with little, if any, increase in the amount of power it is now purchasing.

From the Long Lake plant the Intermountain transmission line runs 113 miles southwesterly to Taunton on the railroad, where is located the most easterly of the eight substations. Here the power is fed into the Railway Company's transmission line, and metered at 100,000 volts. As shown in the photograph, the Intermountain line uses double pole construction, with conductors arranged on one long cross arm in a horizontal plane. They are 115,500 circular mills, stranded copper, and are spaced 10 feet, 6 inches, apart. This is equivalent to 13 feet, 3 inches, triangular spacing. The average height of poles is 45 feet, and they are set on an average of 270 feet spans.

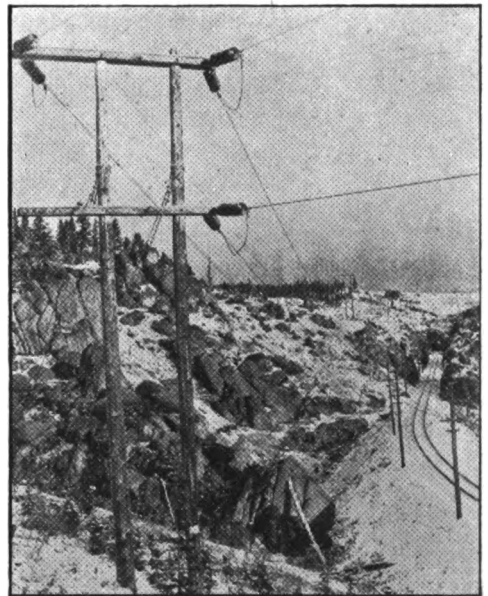
This type of construction is very strong, and is materially cheaper than steel. The poles should be good for eighteen or twenty years' life. The exclusive use of wood poles by both the Intermountain Power Company and the Railway Company is a



115,000 VOLT OIL SWITCH ON INTERMOUNTAIN LINE AT LONG LAKE. THE TERMINAL BUSHINGS ALONE WEIGH FIVE TONS, CRATED



MILWAUKEE RAILWAY 100,000 VOLT TRANSMISSION LINE. DOUBLE ARM CONSTRUCTION AT HIGH POINT. NOTE STRANDED STEEL GROUND WIRE ON END OF CROSS ARM



MILWAUKEE RAILWAY 100,000 VOLT TRANSMISSION LINE. SPECIAL CONSTRUCTION AT ANGLE POINT AND LONG SPAN (875 FEET)

feature of the work which has occasioned surprise to some engineers, but even a surface analysis of relative merit shows the wood construction to be amply strong and more economical than steel.

The line of the Railway Company from Taunton to Cedar Falls is 141 miles long. The type of construction is shown in the photograph. Single poles are used, averaging fifty feet in length, set on 270 feet spans. The conductors are placed on an "L" 9 feet, 6 inches, on the vertical leg, and 10 feet, 2 inches, on the horizontal, the equivalent of 10 feet, 9 inches, triangular spacing. They are 2/0 stranded copper, with hemp core, giving a diameter of 0.447 inch to reduce corona losses.

There are no telephone wires on these poles, the train despatcher's circuit on a parallel lead being used for communication between substations. The use of a hemp center to increase conductor diameter is standard practice with the Railway Company, and some of the lines of the Montana Power Company have also been constructed in this way. This has been the cause of some criticism, based on the extensive failures of hemp cored cables some years ago, which were attributed to a chemical or electrolytic action brought about by the hemp which destroyed the tensile strength of the copper strand.

This subject was given much study by the railway's engineers, who became convinced that previous failures must have been due, either to acids in the hemp or to other causes, such as excessive tensions in the conductors, etc. Tests made on conductors of this kind, which had seen long service in Montana, showed no deterioration in the tensile strength. Although one of the largest manufacturers refused to bid on hemp cored cable, its use was decided upon, and it has now been in service for four years, without any sign of deterioration.

From Cedar Falls to Snoqualmie, ten miles, the Inter-mountain Company owns the line. The construction is similar to that of the Railway Company, except that 1/0 copper conductors are used, the diameter being only 0.398 inch. As the maximum elevation is less than 1,000 feet, and the temperature seldom reaches 80 degrees F., the corona losses on this short line should be negligible.

From Snoqualmie a line of the Railway Company runs west twenty miles to Renton and thence twenty-seven miles to Tacoma, supplying a substation at each point. This line is identical in construction with the one between Snoqualmie and Cedar Falls.

TABLE

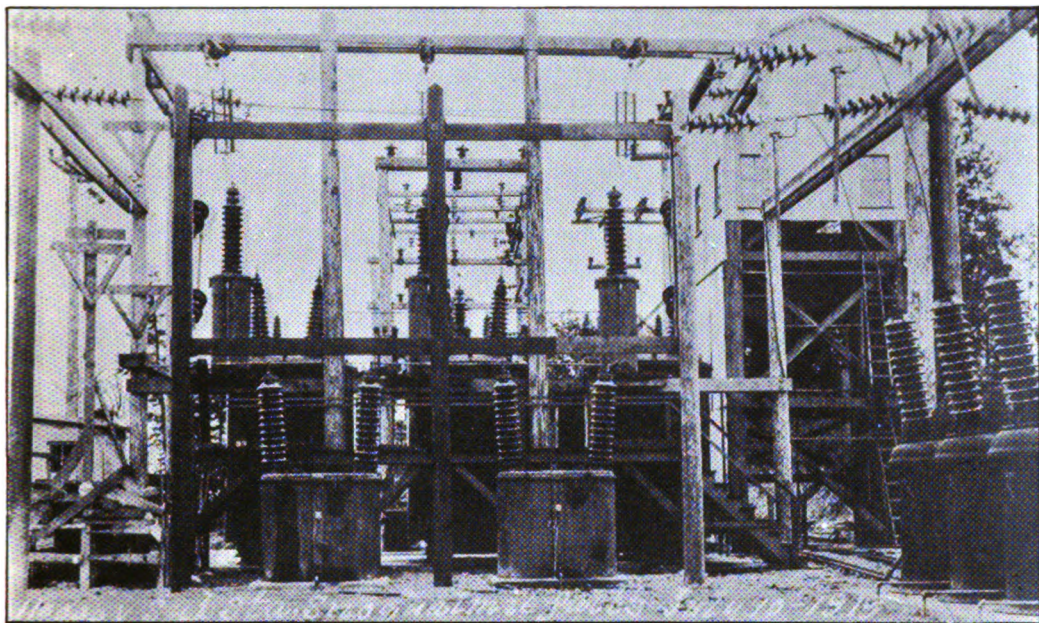
Based on the Potential at Long Lake remaining constant at 110,000 Volts per phase and Snoqualmie at 95,000 Volts per phase

	Load	Power Factor	Current	Poten- tial	Reactive Power	Apparent Power
Snoqualmie	0	.0 Lag	78.25	95,000	12,870 Lag	12,870
Long Lake	834	69.8 Lead	6.28	110,000	857 Lead	1,195
Snoqualmie	3,000	25.5 Lag	71.3	95,000	11,360 Lag	11,750
Long Lake	3,636	80.4 Lead	23.7	110,000	2,690 Lead	4,525
Snoqualmie	6,000	52.8 Lag	69.0	95,000	9,630 Lag	11,350
Long Lake	6,765	85.7 Lead	41.3	110,000	4,070 Lead	7,890
Snoqualmie	8,000	69.7 Lag	69.8	95,000	8,220 Lag	11,470
Long Lake	9,015	87.5 Lead	54.1	110,000	5,000 Lead	10,300
Snoqualmie	11,000	82.8 Lag	80.7	95,000	7,440 Lag	13,280
Long Lake	12,738	95.8 Lead	69.8	110,000	3,810 Lead	13,300

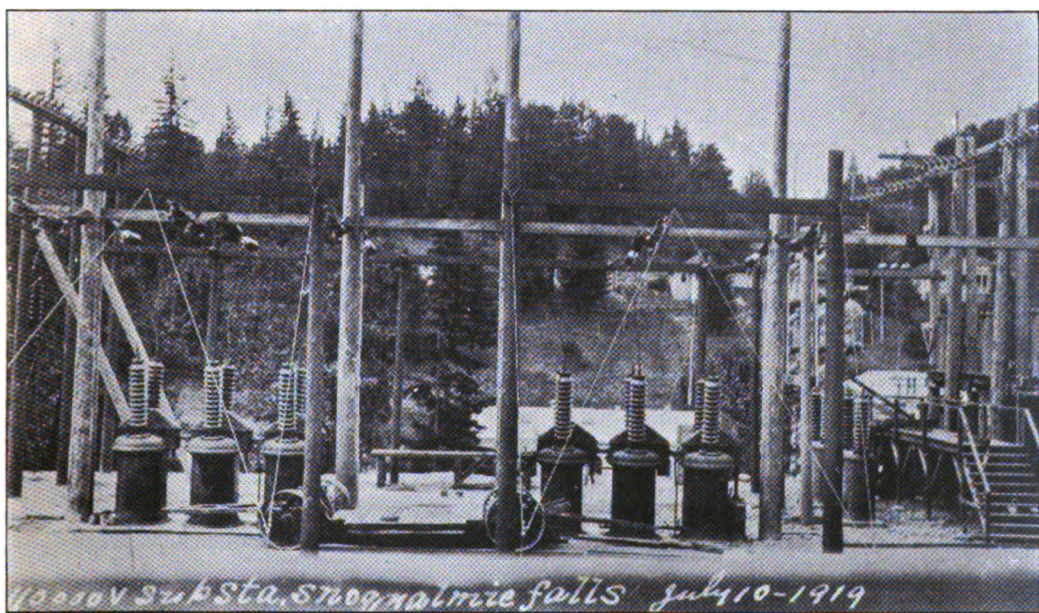
Great care has been used in every detail of the design of the Railway Company's lines. Tensions and sags have been carefully measured and suitable factors of safety have been provided throughout, guys being generously supplied at all necessary points. The insulators in particular have been subjected to especially close scrutiny and have had to withstand exceptionally severe tests, both electrical and mechanical. While some features of the design have been the subject of criticism, experience in Montana is daily building up a verdict in favor of the designers, and there is every reason to predict that time will prove this criticism to have been ill-founded.

The line between Snoqualmie and Long Lake, consisting of three sections, as described, has many interesting electrical characteristics for the engineer and the operating man. While no actual tests have been possible of the line as a whole with the substations disconnected from it, a series of calculations made up by Mr. Jennings, of the Seattle Division Engineering Department, show that with the line open at Snoqualmie and energized with 110,000 volts at Spokane, the charging current would reach about 18,400 K.V.A.; the voltage on the line at Snoqualmie would be 128,800 volts; and the power factor at Spokane would be about 6.4 per cent leading. The corona losses will vary from nothing to 700 or 800 kilowatts, being appreciable only in the hottest weather, and at low barometer. During the period of a year the energy loss through this cause would probably be insignificant.

The accompanying table shows how power factor, loss and apparent power will change under varying loads with voltages of 110,000 at Spokane and 95,000 at Snoqualmie.



OUTDOOR SUBSTATION, SNOQUALMIE. POTENTIAL TRANSFORMERS IN FOREGROUND



OUTDOOR SUBSTATION AT SNOQUALMIE, SHOWING LINE SWITCHES

The operating routine, as now agreed upon, requires that Long Lake keep power available as continuously as possible at the end of the Intermountain Company line at Taunton, and that we keep the lines hot at all times from Snoqualmie to Cedar Falls, and to Renton. From this point the Railway Company becomes responsible. In all operating matters we deal with the representative of the Intermountain Power Company, who in turn deals with the Railway Company's men.

An unusual feature, from the operating standpoint, is that we are to receive power from this line in addition to furnishing it. We have contracted with the Intermountain Company to receive for a period of years all of 15,000 horse power supplied to the line at Long Lake, which we can draw from the line when the Railway is not using it. As the Railway load factor will not be much over fifty per cent, there will be, allowing for losses, about four and one-half million kilowatt hours per month available, of which amount we will with careful attention to regulation, probably be able to get about two-thirds. At the present time the Railway Company has not commenced electrical operation of trains, and we shall for a month or so have the benefit of the full amount of power, less losses, the amount being decreased as electric locomotives are received and placed in service, until full operation is reached, perhaps next February.

A RUSSIAN VIEW OF THE SOCIAL DISLOCATION

BY GEORGE DE BOTHEZAT

[The following remarks were embodied in a letter to the president of the National Cash Register Company by a Russian scientist and engineer, a member of many learned European societies, after an inspection of that company's factory.]

I had yesterday the opportunity to spend a few hours in your National Cash Register factory, and I can not restrain myself from telling you how deeply I was impressed by everything I saw. I had heard before about the organization of your factory, but I realize now that those who have spoken about it have only told about different details of the work and organization and have not at all brought to my attention the most important fact, the large heart and the powerful spirit that was evidenced at each step I made through your factory. When I arrived at your factory I was first invited to listen to a lecture giving a general survey of the history of the factory, of the work of its different departments, of its organization and actual state. And before the lecturer ended I began to acquire a feeling under the influence of which I shall certainly long remain. In this century of the biggest social cataclysm ever experienced, when confidence in the old social order seems to be lost, when everybody is seeking for new ideals, your factory appeared to me a brilliant living example of the most admirable social order ever seen.

It is impossible for me to look at your factory simply as a factory; it is really a State governed by the highest humanitarian principles. I understand now why many who have seen your factory did not realize fully what they had seen; it is because the things were too great. And afterwards it has probably been the lack of a standpoint for comparison that in most cases accounts for their insufficient understanding.

In reality, when we think the matter over a little bit, the whole of humanity can be conceived as a tremendous factory, because only honorable and useful work makes men become Men; that is why the same principles ought to be applied to humanity as a whole as to any part of it. If the different governments could have plainly understood only the half of these great principles that you have with such power applied to your factory, many disasters of our times would be avoided.

I have had in my life a quite exceptional experience. I have not only lived through all the Russian revolution and the beginning of the Bolsheviki regime, but previously, from the beginning of the great war, I was thinking deeply about the disaster that had occurred, and was convinced that this war could not have an ordinary end. The Russian social revolution was for me only a phase of the big social movement that had started and which I was considering with a broken heart. The reasons of all this suffering were too evident to me. It was because the great moral principles that must guide humanity in its evolution had been forgotten. In a few words I will explain exactly what I mean.

Humanity is an enormous process of evolution, whose destiny is not known to anybody. But the history of humanity so far shows us the way that had been followed, shows us those principles the neglect of which brings the greatest disasters. First of all, the process of humanity is a process of progressive perfecting of humanity as a whole, as well as of each individual. Everything that appears to stop that progress is sooner or later bound to break down, and this in a more terrific way the bigger has been the resistance opposed to progress. This majestic route of progress we have to follow, each of us in close touch with others.

Each association, in its life and activity, can be guided by two kinds of principles — the altruistic principle and the egoistic principle. When guided by egoistic principle men think only about themselves and do not care about others. The result is that every one soon becomes the enemy of the others. Each man is brought, so to say, to fight all the others, his forces are greatly reduced in such unequal and useless battle, and finally, only suffering for everybody is the result reached. On the contrary, the altruistic principle requires that an activity, being useful to yourself, not only does no harm to others, but so far as possible is at the same time useful to others. Every one becomes the ally of all others. The forces of every one are increased by the help of others. And from the union of the efforts springs the power and welfare of all.

It can be categorically stated that the present tremendous disaster that has overtaken humanity is a direct consequence of the egoistic principles that prevailed at the end of the last century and in the beginning of the present century. We must have the courage to recognize in our modern society, that in

nearly all the past centuries one was not so much required to be a useful man as to be indulgent to the vices of others and to give support to criminality of others (by criminality I only mean egoistic tendencies). This state of things was an enormous brake for the epoch of biggest progress ever seen by humanity, the epoch we are actually living through. It was the breaking of progress by egoistic tendencies that brought the great war; it is the breaking of progress by these same tendencies that appears to be bringing universal revolution.

That is why, when I came to your factory, after all the horrors I had seen in the last few years and with an understanding of the real cause of it all, that I was so highly impressed by what I saw. What I have seen is only the realization on a small scale of the most perfect social order to which humanity can bend and in which it must find its happiness and welfare. I think no better lesson could be given to all kinds of modern social reformers than to show them the N. C. R. factory, with its so high humanitarian organization, and make them understand plainly those principles that have brought such admirable results.

I will not stop to enumerate all the deep impressions I got from seeing the different departments of the N. C. R. factory. They are too numerous. A whole book could be written about them, but I will only try to express my feeling regarding those high principles that have brought a man of large heart to realize those great things, which it is especially necessary for every real man in our dark century to see.

A man born on earth starts his life in his family. There in his youth he is taught principles to guide him in his relations to other members of the family, and which bring with them, as well as his own happiness, the happiness of the other family members. These principles have developed through centuries and men have been brought to them by the natural desire of the family welfare. Those principles are the highest principles by which men can be guided. They have found a latent expression in the Christian religion: "Care for others as much as for yourself." To those words I would voluntarily add, "Care for the destiny of others more than for yourself." The heroic soldier dying on the battle field sacrifices himself in the name of this last high principle. In happy families these principles are very closely followed. From the family we extend these principles in a certain measure to our friends and subordinates. To a cer-

tain degree we extend them to our citizen fellows. War here occasions the question: Why, the farther we go from the family, the less do we follow the high principles of the family ethics? Why don't we carry these high principles farther in our life? It is self-evident that our duty goes from our nearest relatives to other men, but why must we treat other men worse than members of our family?

In the last century we have seen a tremendous progress in science, which is nothing else than the progress of the means that give welfare to humanity. But I have the impression that the hearts of the men, that their souls did not follow that progress. The direct result is that all that could be used for the welfare of humanity was only used for its disaster, for its biggest disaster. It is the same as a knife which in the hand of a surgeon helps the suffering of man, but which in the hand of a bandit only creates those sufferings. The use that is made of each means fully depends upon the culture of the man that uses it. The same could be said about capital. Capital in the hands of men of large hearts and broad minds is the biggest, most powerful instrument of progress. But the same capital in the hands of men of low morality and culture is an instrument of suffering and slavery for others. It is without doubt the bad use made by some capital that has brought about the actual deplorable state of social things. This condition is merely the consequence of the general prevalence of egoistic tendencies in recent times. But, together with all the tools invented by man, capital is one of the most important factors of progress; only, the proper use of it has to be made.

Now I believe that the evolution of man must be in harmony with all his personality. The evolution of the soul must follow the evolution of the mind; first of all, in extending those high principles that are born in the family to other men. This tendency is an ideal for humanity, and the nearer we approach to it the larger is the humanity welfare. Evolution of mind demands evolution of heart and soul, otherwise means created for welfare become means of the worst sufferings ever seen.

It is those high principles brought into the organization of your factory that have first of all impressed me. Your factory has been for you a part of your family. You have thought of the welfare of each of the members of your factory in the same way that you think of the members of your family. You have

sought the development of your factory in the development of each member, to whom you give the complete possibility of moral, intellectual and physical development in a degree that is rare in any State Organization. And those who have had the happiness to work in your admirable organization have been taught, too, one of the greatest things of the world — that work is really the source of all happiness, when the products of this work are used for the welfare of all. Those things should be self-evident, but in reality they are so great that men generally don't attain to them. But now humanity in its evolution has reached such a state of affairs that delay is no longer possible. It has always been my firmest conviction that the world can only be saved by the high principles you have been guided by in your admirable activity.

I send you, with the expression of my sincere admiration for your personality, my heartiest wishes for a complete victory of your high ideals for the welfare of suffering humanity. After all the terrors I have lived through in the last few years it was really a happy day for me to live at least a few hours in the atmosphere of your factory.

THE NEED AND VALUE OF THE CHEMIST TO THE SMALL GAS PLANT*

BY H. VITTINGHOFF, M.E.

The preceding paper† has shown very clearly how necessary a member of the organization of the large gas plant is the chemist. This should be, of course, a self-evident fact when it is considered that the manufacture of gas is a chemical industry rather than a mere technical process depending only upon the mechanical operation of certain machinery, the performance of which can always be prognosticated with accuracy by its designer. While great engineering skill is required in the design of electrical generating apparatus, for instance, and in connection with the arrangement of the various apparatus in the power house, the operation of such an establishment, though necessitating the exercise of considerable judgment, great vigilance and a marked amount of mechanical ability, especially in connection with maintenance work, does not require that the operating staff necessarily include a man of thorough technical or scientific training.

Any industry established for a long enough period of time is bound to feel its true requirements, its salient needs. The electrical industry has recognized that its interests were best served by expending the greatest efforts on the scientific development of the art of designing the generating and auxiliary apparatus. It is not an unfair criticism of the gas-engineering profession to state that it has never produced men whose scientific accomplishments equal those who stand on the pinnacle of the engineering profession specializing in the development of electrical apparatus. The cause of this is two-fold. Originally the fault was ours. For half a century the gas industry was dominated by men whose chief virtue was their faithful adherence to the methods and ideas of their predecessors. This, fortunately, is a phase which we are rapidly outgrowing if we have not entirely escaped its baneful effects. The second and more important cause is to be found in an entirely different direction. The human race for the last two thousand years has not shown itself to be markedly altruistic. With the exception

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†The Value of the Chemist to the Large Gas Plant. — E. J. Murphy.

of a diminutive if not negligible minority we are inclined to put forth our greatest effort in ventures which we believe will result in the greatest direct gain.

This general tendency is illustrated by the direction which progress has taken in the development of gas engineering. Relative to the advance in methods of operation the scientific design of apparatus has lagged behind. The electrical engineer found his reward immediately he had produced highly efficient machinery. With but little change in design standardized power house equipment will work successfully, providing ordinary care and judgment is used in operation, whether wood is to be burned under the boilers in the Northwest, anthracite in Pennsylvania, high volatile coal in Alabama, oil in Texas or "begasse" in the West Indies. The gas engineer is not so fortunate. Owing to the infinite variety of raw materials which local conditions of an economic nature force him to use, the proper scientific design of manufacturing apparatus is bound to be second to the necessity of exercising the greatest care in the choice and application of the most economical operating methods to be applied in working up such available raw materials.

It is not intended to convey the idea that for our work crude apparatus is good enough or even acceptable, nor that a limit has been reached beyond which it is useless to push the application of science to the design of apparatus. On the contrary, not nearly enough has been done along this line in spite of the excellent work of our designers, especially in the last ten years; but it should be emphasized that our designers are, from the very nature of the problems which confront us, not in the position to offer us the aid which it was in the power of the electrical engineer to yield to the central station operator. In our line of work the end is not reached, or even approached, when we have installed suitable apparatus, even if of the best design for the conditions prevailing, but it still remains to devise proper manufacturing methods in order to attain the most economical results.

Such methods of manufacture can only be brought to the highest degree of perfection if their working out has the benefit of the services of a man with chemical training. In fact, the responsibility of the choice of the methods of manufacture to be adopted should be placed entirely in the hands of a chemist, or, better still, a chemical engineer. Such a man is of neces-

sity a specialist and usually has the limitations of a specialist in any branch of learning, a tendency towards narrowness, an inclination to subordinate general aims to the requirements of an exact application of scientific principles. At this point, therefore, it should be brought out that we must differentiate between operation and manufacture. The executive head of the plant responsible to the general manager should be the operator who has to supply the demand for gas, arrange for the necessary raw materials, meet the labor problems, supervise the maintenance work, etc., and he should have on his staff a manufacturing specialist, a chemist, who should control the consumption of the raw materials and devise means for obtaining the best results from the apparatus and materials at hand.

This is undoubtedly the best organization for the large plant. For the small plant, i.e., the one producing less than a million cubic feet per day, the problem is immediately aggravated by the expense of maintaining and paying for such a complicated dual organization. In such a case the management must decide whether it is wiser to dispense with the services of a superintendent perfectly trained along mechanical lines and take a risk of neglecting the maintenance work or running into other operating difficulties, or doing without a chemist and carry on the manufacturing work in the usual rule of thumb way which, it is regrettable to say, is still so prevalent. The obvious solution of engaging for the duties of a superintendent the services of a man trained both as an operator and a chemist is much easier of statement than of attainment.

Fortunately, the very fact that the plant is so small that it is not in the position to maintain both an operating superintendent and a manufacturing chemist carries with it in a good many instances its own compensation. The commercial problems, matters of policy, the question of public relations, are often not so weighty or so arduous but that the general manager can give a good portion of his time to the supervision of the operating activities, relieving the superintendent of a great many of the duties for the performance of which in the larger plants he is responsible, and permitting him to devote his energies to following in detail the various processes of manufacture and by-product recovery.

Under such conditions it is entirely possible for even a small gas plant to engage the services of a technical graduate

who, though he may not be a full-fledged chemist, has received in his course of study such a sound fundamental knowledge of chemistry, both general and analytical, as to enable him to apply this knowledge to the supervision of the chemical operation carried on under his direction. He should be able (and have the necessary time) to make the analyses which will enable him to demonstrate to his manager which raw materials available in the local market should prove most economical and result in the lowest operating costs. It is even more important that he devote considerable attention to the functioning of the manufacturing apparatus itself. In a water gas plant, for instance, he should give his attention not only to the daily test for carbon dioxide in the finished gas, but considerable time should be devoted to the investigation of the intermediate products such as "blue gas," producer gas and waste gas, and the supply of steam and air during the run and blow should be regulated upon a rational basis indicated by the information yielded by the chemical investigations. Aside from the routine investigations of the producer and flue gases in a coal gas plant, there is, of course, to be observed the distribution of the ammonia, for instance, in the gas as it passes through the various pieces of apparatus in order to discover how they function, while tar determinations yield equally useful and important information. Investigations of a general nature, such as the effect of introducing more or less steam or stack gas under the producer grates, higher or lower vacuum in the retorts, the effect on purifying efficiency of backward or forward rotation of the boxes are innumerable and all yield useful information tending, if intelligently applied, toward lower manufacturing costs, and are therefore to be considered as part of the superintendent's chemical work.

It may be objected that this employee's time can be more usefully applied along more general lines. It is perfectly true that the observations which it is necessary to make to obtain the information outlined heretofore are not such as to require the services of a highly trained technical observer such, for instance, as would be required for the work of the research chemist. In fact, most of the determinations can be made in "cook-book" fashion according to a set of typed instructions and they can be performed by an intelligent high school graduate. What cannot, however, be accomplished in such fashion is the interpretation of the data gathered. This requires the

best technical knowledge available at the plant. Assuming that the superintendent, as herein advocated, is a technical graduate, his duties should be so apportioned that he has ample time to devote himself to this part of the manufacturing work which, under the conditions outlined, he should consider his most important duty.

When we consider the operation of the very small gas plant, one turning out less than three hundred thousand cubic feet per day, we often meet with a most puzzling problem. Frequently such plants are adjuncts to more important street railway or electric light properties. The manager of such combination plant may be a railroad man, the superintendent possibly trained only as a central station operator. Under such conditions the operation of the gas plant often limps along by hook and by crook as best it can. Originally not profitable, it becomes less so and the management very naturally concludes that small gas plants are inherently not revenue producers and is inclined to take the attitude that it is no use to throw good money after bad. The manufacturing processes are neglected and left to the tender mercies of a plant foreman who has not the necessary training to obtain the best results nor the judgment to purchase the most economical materials available for local use. Under such conditions remarkable improvement can be obtained from the services of a young technical graduate, who, as student engineer, devotes part of his time to chemical control of gas manufacture. As this kind of work, however, is of a highly specialized nature, it will take a long time before the young student can show results unless he has an opportunity to discuss the results of his investigations and be guided in them by a more experienced gas engineer or chemist. Sometimes this can be accomplished by engaging as a consultant the technical director of manufacture of a gas plant located in a large neighboring town. Fortunate indeed it is if such a small gas plant is one unit of a number of properties under the control of a management syndicate, as in that case the services of a man qualified to give expert advice of a technical nature are available at all times.

In a country as rich in natural resources as ours it is not astonishing that the industries should have been slow in accepting the benefits which exact science, when applied to manufacturing processes, can bestow. We can note with gratification that the gas industry may claim to be among the first of

the great branches of industrial undertakings to enroll the services of science in its endeavor to derive the greatest benefits from the smallest demand on the gifts with which nature has endowed us. With us the chemist has come into his own.

SOME ASPECTS OF THE STATISTICS DEPARTMENT WORK*

When the Stone & Webster Organization began its task of managing public utilities, it possessed an equipment for the work which it had built up with painstaking care. Prior to its undertaking the management of public service corporations, the firm of Stone & Webster had, on request, made examinations of a great many different properties. It had sent its men to all parts of the country on investigations of electric lighting and street railway companies, with the idea of suggesting engineering changes and changes in management which would conduce to more profitable operation. The data which it accumulated in the course of these examinations constituted the starting point for its later activities in the management of public utilities.

The information collected was notable in two respects. In the first place, it was gathered by a corps of experts from the firm's Boston office. They were men who knew their business, and the result was that the information which came in was accurate. In the second place, this corps of experts was directed by one mind, and the data were uniform. Owing to these two facts and the fact that studies of so many different properties were made in order to discover their good points and their bad points, the firm was well equipped to take over the management of public utility corporations. From the very beginning its effort has always been to see that all the data gathered by it should be accurate and uniform, and that is one of the things which the Statistical Department has had consistently in mind from the very start. We are sometimes asked why it is that our statistical work is confined so largely to the Stone & Webster companies; why we do not make a further study of outside properties with the idea of getting similar information. The explanation is that we are not able to get information from other properties with such unquestioned accuracy or uniformity, and that any inferences we would draw might, therefore, be misleading.

In our effort to obtain accurate and uniform data, we have spent a great deal of time in perfecting the forms of reports which have to come to our office. The report with which the Statistical Department is most intimately connected is the

*Compiled from various talks by Mr. N. H. Daniels to members of the Stone & Webster organization.

operating report, in which accuracy and uniformity are most desirable. Sometimes we get a suggestion of real value for changing our report, but are obliged to point out that while it would work well in some one case, it would not be applicable to companies differently situated. In making up our operating reports we have tried to label everything very carefully, and to be specific in our directions as to what figures should be put in.

One of the items which is called for in the operating report is the number of pounds of coal used. The figure which is wanted here is, of course, the amount of coal which has actually been burned under the boilers and not a figure which has been adjusted to cover any discrepancy which may exist between the amount bought and the amount burned. Such a discrepancy may have been due to loss in transit from the mines, shrinkage, theft, or use for purposes other than making steam, and so far as these are concerned should not be included in the figure for coal burned, otherwise the efficiency figures based on coal burned will not reflect the actual results of operation.

I am something of a farmer out of business hours, having a little place in the country, and some years ago I cut a quantity of wood on my wood lot, about 250 cords in all. When I completed the sale of the wood to people around the town, I found I had sold only 225 cords. Where the other 25 cords went I am not able to say. Perhaps some of the wood which was taken away had not been recorded. Perhaps some was taken away secretly — but, somehow or other, I was shy 25 cords. Now, if one of my neighbors buys $2\frac{1}{2}$ cords of wood from me he expects to receive $2\frac{1}{2}$ cords, and if I passed over a smaller lot he would have the Sealer of Weights and Measures on my trail. An analogous situation might easily arise in connection with any of our public utility companies. The man who buys my wood wants full measure; our operating report wants the exact number of pounds of coal burned under the boilers.

The Statistics Department lays great stress on the value of unit figures, and as a result we sometimes reach quite unexpected conclusions. For example — it was quite generally believed recently that the unit of earnings of street railways was declining. The Statistics Department made a very careful study of the earnings for the last ten years, starting with the supposition that the earnings per capita had decreased on account of the general use of automobiles. We found, however, an increase in earnings per capita of 25% during the ten years,

1909-1919. In view of the automobile competition and other adverse circumstances during these years, this was very encouraging. Those figures, with the hope that they encourage for the future, are based entirely on the statistics of the past. The question of population enters into this problem. I speak of that because practically every year we write to our companies asking for a detailed estimate of the population on January 1st. It is a very difficult matter to handle; requires careful judgment, necessitates probing into various sources, such as school census, directory names, etc. Our aim is to get a correct estimate of population. We work out the unit figures. Data of this kind are helpful to us in following the operation of our companies. The information is being demanded more or less by State organizations and at times by the Federal government. It is being called for holders of securities and prospective buyers of securities. There are often questions of mileage, number of cars owned, and physical data as distinct from financial data asked. The preparation of correct statistical data and the use of the same are, therefore, very important. The data are based without exception on the operating reports, which are gone over very carefully by the Statistics Department. We try to raise questions of why and wherefore. The companies, therefore, receive letters from one to ten pages asking microscopic questions.

A considerable part of the work of the Statistics Department is done by young men who come into the department with the idea of going out and entering the operating field of our companies. The greater part of these men are college graduates, preferably with electrical engineering training. They stay in the Statistics Department until they have become sufficiently familiar with the work in the home office, and until we feel that they can intelligently take up any work set before them.

In addition to the lines of work already alluded to, the Statistics Department gathers a great deal of miscellaneous data relating, for example, to the rates of fares of our companies, wages paid to trainmen, rates for electric lighting, etc. The following illustrates the usefulness of this kind of work. Some years ago an elderly man came in, who was unusually inquisitive regarding street railways. The question he seemed to harp on was, "How many cars have you?" We were able to show him our records, and were afterwards told that that

exhibition did more than anything else to establish his faith in our Organization.

An interesting phase of the Statistics Department is the handling of insurance. We are often asked why the Statistics Department handles insurance and real estate. Prior to 1904 there were two separate departments, the Real Estate & Insurance and the Statistics. The two were united at that time for the fortuitous reason that the head of the former decided to become a pedagogue. In insurance we act in a general supervisory capacity, and give advice and help as much as we can. All policies are sent in to us for examination and scrutiny. The insurance policy is a contract between the owner and the insurance company. A good insurance policy is good protection, and a poor insurance policy is no protection at all. For that reason we examine every policy that comes in. In some cases the insurance is placed by the local offices; in other cases it is placed by our office.

I can state in a general way that if the condition of our properties was today what it was in 1903, and if the insurance rates were what they were then, we should be paying \$475,000 per year more than we now are, and we are getting a great deal better protection today than we were in the beginning. That saving has come from a number of sources, but it has come with the co-operation of the local companies in improving our properties. At one time the feeling seemed to exist that the more an insurance is split up and the greater number of policies we had, the better was the local company's protection, and exactly the reverse was found to be the case. We would give a great deal more for a single policy in a big, strong company than for twenty-five small policies in twenty-five strong companies, for the reason that the company writing that single policy attracts the notice of the home office of the company, which sees that the local company gets the best protection.

We place through the home office the boiler insurance, which is placed in the form of a blanket policy, a single policy covering the boilers of all the Stone & Webster companies. The limit of that policy for any one disaster is \$50,000. By placing the blanket policy through this office we are able to get that large amount of protection for about twenty-five per cent less than if every company placed its policy singly.

Another policy of blanket form is that covering the fire insurance of the automobiles of our companies. We cover

nearly 400 cars at the present time, and the aggregate value must be from \$300,000 to \$400,000. By writing the blanket policy at the time we did, we were able to get insurance for much less than we could have gotten it later.

Another matter which we handle is the fidelity bonds of all the companies. The bonds at the present time aggregate \$3,000,000. The company which was handling our business a number of years ago was able to make us a special rate for all our business. Taking the time of which we have record, which is from about 1903, the total amount which the insurance company has had to pay over to us is about \$25,000, of which the company has been reimbursed about \$12,000, which has been paid back by individuals who have taken our money and afterwards compromised with the insurance company. The loss to the insurance company is about \$13,000, certainly a wonderful record; a record which is regarded by us with a good deal of pride, and I may say by the insurance company as well. Speaking of fidelity bonds, certain questions have come up which have interest. In the first place, there are the application blanks. The applicant for a position fills out a white sheet. One of the questions he is asked is, "Your occupation during the last ten years?" The bonding company wants the applicant to give full details over the last ten years of his life to the end that it may know that the man had not been in jail or mixed up in some trouble during that time. If the man said he was in business for himself, the bonding company will probably want the names of two or three persons who can testify to that effect, not from any desire to plunge into his personal affairs, but in order to protect itself. It often happens that the man's business failed. The question then is, "Was it an honorable failure, or not?" The question of debt is also of importance in connection with the employees in our office. I have had a case where the man failed to answer the question regarding debt, and the bonding company wrote him. He wrote back, saying that he had not answered the question because his debts were simply for current expenses. The company wrote back asking for details, and the man declined to give any further explanation and resigned his position. That is what the bonding company is working for, and that element of looking up a man's record has been of great value to our Organization, and has prevented us from taking on undesirables. It might seem sometimes that the bonding company is pretty strict, but I

have never known of a case where it was too strict, and have always found it to be fair.

After a man has gotten his bond two questions arise. One is, "Does the bond cover a man for the position which has been assigned to him, or any other?" The second is, "Does the bond run, assuming that no trouble is discovered, until his leaving the company's employ?" After he leaves the company's employ you have one year to discover any irregularity. If the man leaves of his own accord, or we discharged him, his bond terminates; but should we discover something which indicated that the man had taken something, the bond is also cancelled. That is, the bond runs only so long as the man has a clean record. When it is found that he has been guilty of any dishonest act, the bond is immediately cancelled as to future acts. This is an important point, because something might be discovered that was small and trivial, and the company might keep it quiet and say nothing about it. Now, if later on, that man should be found guilty of any greater misdemeanor we should go back to the bonding company, and the bonding company, learning of the earlier shortage, would point out to us that the bond was cancelled at that time. It is very necessary that the earlier irregularities should be taken up by the bonding company and the matter straightened out by them; otherwise, the man must be put in a position where no bond is required. Supposing the question arises, "What should be done with the man?" The first thing to realize is that the bond is cancelled. The thing to be done with the man rests with the employer. He can pocket the loss and settle the thing himself, or could report to the bonding company, but the question of the cancellation of the bond is entirely automatic and out of the employer's control. It sometimes happens that there is doubt as to the real shortage, and the only thing to be done is to notify the bonding company. It is very necessary to keep the bonding company fully in touch with the situation if we are going to continue our good record.

The following will illustrate what might happen if the thing is condoned. Some years ago a collector went away to be married. When he was gone it was discovered that his account was \$150 short. We notified the bonding company. A week later the man returned, explained everything, and it was all right. Two weeks later we got notice that the company had discovered a shortage of about \$4,000 on that man. He had

come back, collected all the money he could, and vanished. The clean bill of health which the bonding company gave him came too soon.

From time to time we have inquiries regarding our protection against loss by burglary or hold-up. I want to explain the burglary policy. We have a policy covering all Stone & Webster companies which protects us, in the first place, against loss by burglary; in the second place, it covers office hold-up from someone coming into the office and by force making the cashier give up money; in the third place, it covers the messenger from hold-up. Now, in the case of any loss of this sort, the bonding company does not intend to cover what is ordinarily known as "mysterious disappearance." The burglary must be accomplished by breaking into the safe by violence. It does not cover the case of coming into the office in the morning and finding that the safe is unlocked and the valuables gone. Similarly, office hold-ups and messenger hold-ups have got to be violent things. The fact that a messenger starts for the bank with \$1,000 in his bag and when he gets to the bank he finds that the money has disappeared means nothing. What the bonding company requires is an actual violent hold-up.

One question which often comes up in connection with insurance is what the real meaning of the co-insurance clause is. The ordinary form of policy usually carries a co-insurance clause, ordinarily an 80% clause. The proposition is very simple. The insurance company has given a lower rate in consideration of the guarantee that insurance will be carried to 80% of the value of the property, with the penalty that if you do not carry insurance to the amount of 80%, the amount of any loss will be divided between you and the insurance company in proportion. Values and costs have increased so rapidly that it has been necessary to increase the amount of insurance in order fully to comply with the requirements of the co-insurance clause, and it is necessary for every company to study its values carefully and see that it *does* comply with this co-insurance clause. The local people who are on the property know or can ascertain the value of the property insured better than we can in the Boston office.


A DINNER TO EMPLOYEES

[The following account is reprinted from the Reading (Pa.) *News-Times* of November 15, 1919.]

A dinner was tendered at the Berkshire Hotel by Stone & Webster, of Boston, to the men engaged on the Narrow Fabric Company operation at Wyomissing, and members of the Narrow Fabric Company. Officials of the Stone & Webster organization traveled to Reading to express in person their appreciation of the excellent results accomplished by their men on the job, in keeping the work up to the original schedule.

The ball room, which was finely decorated, was used for the occasion. Music was furnished by Specht's Jazz Orchestra and the Lyric Quintette. A number of talented entertainers from New York and Philadelphia were a surprise to the guests. The following menu was served:

	Appetizer	
Olives	Celery	Radishes
	Blue Point Cocktail	
	Chicken Okra	
	Broiled Rabbit, Garniture	
	Orange Sherbet	
	Broiled Tenderloin Steak, Mushroom Sauce	
Potatoes au Gratin		Early June Peas
	Asparagus Tips on Toast	
	Lettuce and Tomato Salad, Mayonnaise	
Berkshire Ice Cream		Assorted Cakes
Roquefort Cheese		Toasted Crackers
	Demi-Tasse	
Cigars		Cigarettes
	White Rock	

When the contract was first awarded to Stone & Webster, it was frankly believed by many contractors and manufacturers that it would be impossible to complete a building of the size of that now in course of construction within the time specified. In spite of the difficulties now experienced in getting materials, the scarcity of labor, inadequate transportation facilities, E. F. Blakeslee, superintendent of construction, states that the building will be ready for occupancy by January 1, 1920. 

The firm of Stone & Webster is now conceded to be the largest construction organization in the world. It is conducting, simultaneously, huge building operations in various parts of the world. Their organization is designed to take care of the

minutest details. Their service in this respect has been a revelation to their clients, the Narrow Fabric Company. Mr. Thun, treasurer of the Narrow Fabric Company, answering the toastmaster, Mr. Rodden of Stone & Webster, said that in spite of the very considerable increase in the work originally contemplated Messrs. Stone & Webster have asked no additional time.

Altogether, it is the opinion of the officials of the Narrow Fabric Company and other local people who are familiar with the situation, that Stone & Webster have accomplished a truly remarkable result. Work was started on August 1, 1919.

Mr. Rodden called on a number of the members both of the Stone & Webster and the Narrow Fabric Company organization. The following responded: W. N. Patten, A. L. Hartridge, Ferdinand Thun, H. B. Fry, Max Mittendorff, E. F. Blakeslee, W. H. C. Garvin, G. H. Fries, J. E. Kissinger, W. W. Joyce, R. W. Noyes, J. P. Freund, A. Meyer and others.

The following attended the dinner:

W. W. Joyce, R. W. Noyes, W. K. Widger, M. I. Meredith, H. G. Thompson, W. McLean, W. M. Sampson, T. E. Rynn, J. P. Morgan, G. Rinaldo, E. L. Field, A. Frederia, F. Beecher, S. J. Fraser, J. J. Meagher, H. Sause, H. M. Fry, W. N. Patten, W. L. Davis, L. Cavanaugh, E. Hennessey, J. Gallagher, J. R. Lotz, H. F. Hendrickson, C. J. Heine, F. Bider, W. H. Harrington, J. Comorato, W. Osler, T. F. Robertson, E. F. Blakeslee, W. H. C. Garvin, A. L. Hartridge, W. T. Rodden, A. I. Eyster, J. P. Freund, F. A. Fries, J. E. Kissinger, A. Meyer, J. O'Rourke, Ferdinand Thun, M. Mittendorff, F. W. Plumb, C. E. Snyder, S. Strause, C. E. Garden, C. Erickson, C. A. Stiger, J. D. Groh, J. Wilson, F. W. Milligan, G. Hoch.

BUSINESS CONDITIONS IN STONE & WEBSTER LOCALITIES

The managers of the companies operated by Stone & Webster write to the Management Division of Stone & Webster about the first of each month with reference to business conditions in their respective localities during the preceding month. A digest of these letters is published each month in the Stone & Webster Journal.

Baton Rouge, La., October 14th:

Building permits for September, 1919, were valued at \$58,517, against \$27,119 last year.

The average number of employees at the Standard Oil Company in September, 1919, was 2,862, against 2,057 last year.

General business conditions continue very good.

It is stated that the cane crop this year is in poor condition, and that the Baton Rouge Parish crop will run about 60% of normal as compared with 88% a year ago, 82% being the ten-year average. The condition on October 1st forecasts 2,672,472 short tons of cane. Allowing average quantities for syrup making and next year's planting, the quantity of cane left would produce under average conditions about 138,398 short tons of sugar. Production last year was 239,900 tons.

There is, however, a big increase in the rice crop throughout the state. Production will be greater by nearly 2,000,000 bushels.

Cotton picking is now nearing an end. The crop this year is about one-third normal.

Building operations are slowing up somewhat this month.

With the number of people moving into the city, houses are still at a premium.

The railway, the light and power and the gas receipts of the Baton Rouge Electric Company for September, 1919, all show increase over last year. The total receipts represent an increase of 42% over 1918.

Beaumont, Texas, October 16th:

Bank clearings at Beaumont for September, 1919, were \$5,371,478, against \$5,909,826 last year.

During September, 1919, 100 building permits were issued at Beaumont, valued at \$157,320, against 59 last year, valued at \$65,953. At Port Arthur 11 permits were issued, valued at \$18,555, against 15 last year, valued at \$12,940.

Post office receipts at Beaumont for the quarter ending September 30, 1919, were \$38,191, against \$14,980 last year. At Port Arthur they were \$12,239, against \$4,261 last year.

The general business outlook for the next few months continues very good. The oil refineries, particularly at Port Arthur, are doing an increasing business. The crops, while heavily damaged by rain during the last few weeks, promise to sell at high prices. Business in both wholesale and retail lines continues excellent, with a promise of remaining at high levels for the remainder of the year.

During the latter part of September unusual rains again endangered that part of the rice crop which is not yet harvested.

The shipping business at this port is excellent, with a prospect of further increases as soon as extensions to the dock are finished.

There is considerable building of dwellings in both Beaumont and Port Arthur. The demand for houses exceeds the supply, however, and it looks as if construction will have to continue for a considerable time in order to fill the need for homes.

The railway receipts of the Eastern Texas Electric Company for September, 1919, show an increase of 29% over last year and the lighting receipts an increase of 25%.

Bellingham, Wash., October 18th:

Building permits at Bellingham for September, 1919, were valued at \$29,560, against \$19,687 last year.

Post office receipts at Bellingham for September, 1919, were \$8,492, against \$7,628 last year.

The immediate outlook for general business is good; there seems to be no reason to expect a slacking up of business in this city. All the industries are working to capacity, and it is believed that the high prices received by the farmers will be reflected in the general prosperity of the community.

The farmers of Skagit County have also sold their crops at high prices.

Although the September weather was not as pleasant as usual, there was scarcely any rain, and the farmers were able to gather and thresh their wheat and oats without any material loss.

Although the timber workers' strike continued during the month, the mills were able to obtain enough men to enable them the last of the month to operate to capacity.

Brockton, Mass., October 14th:

Savings bank deposits in September, 1919, were \$17,136,744, against \$14,755,150 last year.

Bank clearings for September, 1919, were \$14,991,630, against \$12,941,623 last year.

Post office receipts for the three months ended September, 1919, were \$66,493, against \$23,200 last year.

During September, 1919, 50 building permits were issued, valued at \$137,135, against 18 last year valued at \$16,650.

Shoe shipments for September, 1919, totaled 54,668 cases, which is about normal. For the first nine months of 1919, shipments totaled 556,145 cases, an increase of 94,646 cases over last year.

The erection of 300 cottage homes for Brockton workers is a building project which is soon to be launched in this city by the Rotary Club. Tentative plans call for a \$1,000,000 fund to be subscribed by the local banks, one bank having already agreed to contribute at least \$100,000.

The Brockton-Rand Company is to build a \$35,000 addition to its present factory.

The Progress Shoe Manufacturing Company has purchased a tract of land near the railroad in Montello, containing about three and one-half acres, on which it is to erect a shoe factory.

Columbus, Ga., October 6th:

Bank clearings for September, 1919, were \$4,961,070, against \$4,481,-951 last year.

During September, 1919, 11 building permits were issued, valued at \$6,435, against 5 last year, valued at \$15,450.

Post office receipts for September, 1919, were \$10,387, against \$9,204 last year.

General business conditions are exceptionally good. Retail stores are doing a larger business than ever before, which has caused several new stores to open up October 1st, while department stores have found it necessary to enlarge their quarters. The wholesale and jobbing trade naturally feel the good effect of the large retail business, and are planning for an extensive growth.

Cotton mills are running full time, and many of them overtime at night, and are finding it hard to keep production at a level with the large orders now coming in.

The railway receipts of the Columbus Railroad Company for September, 1919, show a very handsome advance over the corresponding period of 1918.

The light and power receipts also show a large advance.

A gain was also recorded in the receipts of The Columbus Power Company, as well as in those of the Gas Light Company of Columbus.

El Paso, Texas, October 3rd:

Bank clearings for September, 1919, were \$25,157,971, against \$19,-524,935 last year.

During September, 1919, 95 building permits were issued, valued at \$206,547, against 74 last year, valued at \$29,464.

The light and power department gained 144 meters during September.

The above would indicate that the city is continuing to fill up. Practically no houses or apartments are for rent, and only a limited number of houses are for sale. New houses continue to be built, most of which are in Manhattan Heights, which addition is growing rapidly.

Everett, Wash., October 10th:

During September, 1919, 33 building permits were issued, valued at \$44,135, against 63 last year, valued at \$10,930.

Everett bankers report the highest deposits in their history.

So far as demand and prices are concerned the situation in the lumber and shingle industry has not changed materially. So far as the shortage of cars is concerned the situation has not only not improved, but the shortage has been very seriously aggravated.

Fall River, Mass., October 10th:

Bank clearings for September, 1919, were \$8,822,146, against \$8,407,-750 last year.

During September, 1919, 49 building permits were issued, against 15 last year.

Print cloth sales for the past month have been very large. Prices have advanced, and there has been great activity at the mills.

Fort Madison, Iowa, October 10th:

Bank clearings for September, 1919, were \$2,376,097, against \$1,576,625 last year.

Post office receipts for September, 1919, were \$8,741, against \$10,117 last year.

The Santa Fe payroll for September, 1919, was \$181,627, against \$205,627 last year.

Building operations continue very active.

The Perfection Tire & Rubber Company has cancelled its entire contract with the Keystone Tire & Rubber Company. Its contract with the Nemours Trading Company will require the entire output of its factory in Perfection tires. It is reported that plans are being considered for the erection of a seven story building in the Factoria Addition for the Perfection Company.

The Rudy-Patrick Seed Company operating the Everingham elevator is working twenty-four hours a day, and is reported unable to fill its orders.

Both the light and power receipts of the Fort Madison Electric Company show a very good increase over the previous year, the power consumption establishing a new record.

Fort Worth, Texas, October 2nd:

Bank clearings for September, 1919, were \$70,790,006, against \$60,482,585 last year.

During September, 1919, 184 building permits were issued, valued at \$2,115,187, against 79 last year, valued at \$85,792.

Stockyard receipts for September, 1919, were as follows:

	1918	1919
Cattle	137,767	67,307
Calves	46,521	36,584
Hogs	41,802	78,081
Sheep	26,551	32,313
Horses and Mules	15,088	6,214

The 1918 figures given above do not compare with those shown in our August, 1918 letter. Apparently last year's figures do not show total receipts for the month.

September was another banner month in Fort Worth's building record, the total valuation being as much as for the entire year 1918.

The general business outlook continues bright owing to oil activities and good cotton crops.

The receipts of our Fort Worth division during September, 1919, showed an increase of 23.1% over last year. Receipts on the Interurban division showed an increase of 57.2%.

Business conditions in and around Cleburne are very satisfactory.

The Tarrant County Traction Company's receipts for September, 1919, show an increase of 26.2% over last year.

Galveston, Texas, October 6th:

Bank clearings for September, 1919, were \$37,569,287, against \$32,337,686 last year.

The volume of business for September, 1919, was \$149,247,000, against \$111,192,000 last year.

During September, 1919, 423 building permits were issued, valued at \$92,191, against 388 last year, valued at \$15,286.

Wheat exports for September show a decrease from August of 68,149 bushels. There was an increase, however, of 593,312 bushels over September, 1918.

Galveston has just completed a most successful summer season. It is estimated that 500,000 visitors came here during the season.

The railway receipts of the Galveston Electric Company for September, 1919, show an increase of 18.2% over last year. Lighting receipts also show a gain over last year.

It is predicted that the winter tourist business will this year be the best in the history of Galveston.

Haverhill, Mass., October 15th:

Savings bank deposits on September 30, 1919, were \$15,225,566, against \$13,913,234 last year.

During September, 1919, 24 building permits were issued, valued at \$53,800, against 8 last year, valued at \$69,300.

There were no striking developments in the general business situation during the past month.

Houghton, Mich., October 24th:

General business conditions in the copper country have changed very little in the past month. The mines are able to increase their forces gradually from men who are drifting back into this territory. These are mostly single men.

The regular Copper Country Fair was held during the week of September 23rd. The attendance was very good.

The production of copper in the Michigan copper district for the month of September was 15,000,000 pounds, against 13,000,000 pounds in August. The September production, however, was only 80% of normal, the increase being chiefly in two mines.

Houston, Texas, October 13th:

Bank clearings for September, 1919, were \$101,213,739, against \$87,614,994 last year.

During September, 1919, 40 building permits were issued, valued at \$803,628, against 250 last year, valued at \$225,400.

Real estate transfers for September, 1919, were \$1,928,346, against \$874,391 last year.

The building boom continues with heavy increases over the previous months. Though the building of homes has been at a high rate for several months past, the housing situation remains very acute.

The lumber market, which has been very unsteady, has become more stabilized.

Houston has started the cotton season with a rush.

The crops in this section which are poor have been further damaged by the storms and heavy rains of the past months.

The live stock in this section is in very fair condition, and considerable movement of cattle was noted during the month. One sale in particular involved 10,600 head at a price of more than \$700,000.

Keokuk, Iowa, October 2nd:

General business conditions continue to look very promising.

An indication of the growth of this city may be obtained from the fact that the enrollment in the Keokuk High School is the largest in the history of the school. There is not sufficient room for all the pupils enrolled.

Key West, Fla., October 6th:

Customs receipts for September, 1919, were \$91,529, against \$47,203 last year.

The cigar output for September, 1919, was 3,600,955 cigars, against 6,726,648 cigars last year. The great reduction in the cigar output was occasioned, of course, by the fact of the strike, which began on August 31st and lasted until September 11th, which was the day after the hurricane. On account, however, of damage done by the storm, none of the factories were able to resume operation until the 15th.

The general business outlook for the immediate future is very favorable. The cigar factories are now working every available operative, and the manufacturers are complaining of a shortage of work people. There is enough repair and reconstruction work here occasioned by the recent storm to keep every class of workmen in this city employed until probably the first of the year.

Lowell, Mass., October 27th:

Bank clearings for September, 1919, were \$4,389,200, against \$4,840,537 last year.

During September, 1919, 112 building permits were issued, valued at \$1,066,485, against 34 last year, valued at \$15,455.

Indications point to continued prosperity in all industries in and about Lowell, which is reflected in mercantile trade. But little unemployment can be noted.

Paducah, Ky., October 7th:

Bank clearings for September, 1919, were \$7,215,702, against \$4,919,531 last year.

There is continued activity in every line of business in this city. The retail business is exceptionally good. There is a general complaint of slowness of delivery in merchandise and retarded freight movements.

The weather during the past week has been favorable for the cutting of tobacco, and it is stated that about 65% of the crop, which is very good, has been cut and housed.

There is considerable residential building going forward, in fact, more than Paducah has experienced for many years. The general opinion is that the building outlook is better than it has ever been in the city's history. A number of pretentious residences are being erected.

Pawtucket, R. I., October 8th:

Bankers report a decrease of 2.9% in commercial accounts in September, 1919, and an increase of 16.1% in savings accounts.

Post office receipts for September, 1919, were \$15,902, against \$17,848 last year.

General business conditions were excellent during September. All lines of manufacture complain of more orders than they can handle owing to lack of help. There is a pressing call for grey cloth, and the price has advanced under the demand.

The jewelry trade reports heavy orders and the scarcity of labor militates against working more shifts.

An advance in the price of print cloth, as well as in bleached fabrics, is reported, and the local agents say that the top price has not yet been reached, as the export demand acts as a strong influence.

The iron and steel industry is swamped with orders.

Retail merchants report a heavy trade in September. The demand for expensive jewelry, high priced shoes, etc., is a surprise to the trade.

The building trade is very active, and contractors are rushing in orders in anticipation of the winter season, but are greatly handicapped by the lack of all sorts of labor.

Pensacola, Fla., October 15th:

During September, 1919, 109 building permits were issued, valued at \$67,161, against 81 last year, valued at \$13,505.

The "Cushnoc," the first steel steamer built in Pensacola, was put in operation during the month. The steamer left for England the latter part of the month with a varied cargo valued at over \$1,000,000. The fifth steel vessel built in Pensacola was launched the latter part of September.

Pensacola men have been assured through Senator Fletcher and Representative Smithwick that the Railroad Administration has promised coal cars for 80,000 tons of Alabama coal destined for Pensacola, from which place it will be exported to France.

Contracts have been closed for the erection of a new cotton compress with a capacity of 300,000 bales a year. This plant gives Pensacola a chance to compete with Mobile, New Orleans and Jacksonville.

Ponce, P. R., October 24th:

During September, 1919, 2 building permits were issued, against 2 last year.

The outlook for general business seems bright.

The scarcity of sugar is making the growers look for an increase in price, and everything is being done to increase the output.

The coffee crop is not as large as the growers expected.

Cuban representatives of sugar growers are canvassing the Island with the idea of securing Porto Rican laborers for the cane fields during the season which begins in December.

Reno, Nev., October 21st:

Bank clearings for September, 1919, were \$4,063,127, against \$2,575,494 last year. For the first 9 months of 1919 bank clearings were \$28,465,190, against \$22,355,177 last year.

During September, 1919, 10 building permits were issued, valued at \$32,300, against 2 last year, valued at \$4,000.

Post office receipts for September, 1919, were \$12,453, against \$9,642 last year.

There was a large increase in our gas receipts last month. Electric receipts also showed to advantage.

Savannah, Ga., October 9th:

Bank clearings for September, 1919, were \$42,374,241, against \$44,666,397 last year.

During September, 1919, 83 building permits were issued, against 19 last year.

Cotton receipts for September, 1919, were 94,842 bales, against 122,667 bales last year.

Turpentine receipts for September, 1919, were 6,118 barrels, against 4,031 barrels last year.

Rosin receipts for September, 1919, were 21,096 barrels, against 16,267 barrels last year.

The Foundation Company Shipyard has closed down, but the Terry Shipbuilding continues in active operation and has drawn on a number of the former employees of the Foundation Company.

Manufacturing activity continues in the Port Wentworth district, as evidenced by the large output from our plant.

There has been considerable activity in cotton and naval stores during the past month.

Building is still active both for residential and commercial purposes. The Southern Fertilizer & Chemical Company's new plant at Hutchinson Island is rapidly nearing completion.

Seattle, Wash., October 13th:

Bank clearings for September, 1919, were \$200,897,666, against \$173,804,368 in 1918; \$98,205,110 in 1917; \$72,013,667 in 1916, and \$50,610,005 in 1915.

Building permits for September, 1919, were valued at \$1,340,695, against \$1,402,310 last year, and \$696,179 in 1917.

Real estate transfers for September, 1919, were \$2,757,651, against \$1,512,676 last year.

As regards general business, September was one of the most encouraging months in the history of Seattle, particularly encouraging as to the volume of real estate exchanges. September transfers consisted entirely of residential and small business sales, no large deals being closed. The year's building activity, in spite of building strikes during the entire month of September, is very satisfactory, and the value of permits for 1919 will surpass any year since 1909, the year of the Fair.

Tacoma, Wash., October 6th:

Bank clearings for the first nine months of 1919 were \$177,458,444, against \$173,864,487 last year.

Building permits for the first nine months of 1919 were 3,122, valued at \$2,384,655, against 2,312 last year, valued at \$2,323,562.

Real estate transfers for the first nine months of 1919 were \$3,734,154, against \$3,118,590 last year.

Tampa, Fla., October 14th:

Bank clearings for September, 1919, were \$7,164,600, against \$5,327,-364 last year.

A statement of bank deposits for the twelve months ending September 30, 1919, shows an increase in deposits of \$5,629,050.

Estimated post office receipts indicate quite an increase over the preceding year, especially when it is remembered that 3c letter postage prevailed in 1918 at this time.

Building permits for September, 1919, were valued at \$59,787, against \$14,875 last year. Most of the permits were for small residences.

Customs receipts for September, 1919, were \$195,133, against \$161,-284 last year.

Internal revenue receipts for September, 1919, were \$383,379, against \$201,068 last year. Part of this increase is due to increased taxes imposed on cigars, but the greater portion is attributed to increased production of cigars in the local factories.

Cigar manufactures for September, 1919, were 44,998,900 cigars, against 37,126,400 cigars last year.

September, 1919, was the banner month in the cigar industry, exceeding by 500,000 the highest previous monthly record.

The Daniels Shipyard has received an assurance that any increases which the Government may make over and above the present scale of the Macy Board will be absorbed by the Government, so the possibility of local shipyard labor trouble is removed, and the activities of the shipyard will carry them to the latter part of 1920.

Houses are at a premium in Tampa.

Woonsocket, R. I., October 17th:

During September, 1919, 12 building permits were issued, valued at \$4,625, against 12 last year, valued at \$58,610.

Business conditions in all lines are reported excellent.

There is a considerable amount of building going on for the mills and more is contemplated, and inquiries for increases in power load are good.

The residence lighting business is going ahead rapidly, with around fifty new services a month, and good gains over last year's business.

News from the Companies

Boston Office

The First National Bank of Boston has contracted with Stone & Webster for the construction and equipment of its new bank and office building.

The United States Rubber Company has authorized Stone & Webster to proceed with foundations for new buildings at the plant of the Hartford Rubber Works, Hartford, Connecticut.

The United States Rubber Company has also authorized Stone & Webster to proceed with an addition to the plant of the Mechanical Rubber Company at Cleveland, Ohio. This work comprises five large buildings and a group of small buildings.

The Pennsylvania Rubber Company of Jeannette, Pennsylvania, has contracted with Stone & Webster for the construction of two large buildings and a power station.

The *Boston Post* has requested Stone & Webster to excavate a basement and install foundations running down about forty feet under a section of their present building.

The Pathe Exchange, Incorporated, has authorized Stone & Webster to design and construct a complete industrial plant at Long Island City, New York, consisting of industrial buildings and a power plant, a refrigerating plant, storage vaults and miscellaneous small buildings.

Mr. George Sutherland, who has just been discharged from the army, has joined the Electrical Division.

Mr. H. H. Boyajohn has entered the Structural Division. For the past two years he has been at Hog Island.

Mr. Harry Gay, of the Engineering Division, has returned to the Boston office after five months in New York City.

Mr. John W. Payne, of the executive office of the Puget Sound Traction, Light & Power Company in Seattle, visited the Boston office recently.

Mr. W. E. Wood, manager at Galveston, Texas, has recently been at the Boston office.

Mr. John W. Kelly, formerly of the Key West Electric Company, has entered the treasurer's department.

Mr. Manuel Condinho has been transferred from the treasurer's department to The Connecticut Power Company, New London, Connecticut.

Mr. F. C. Carleton left the organization on November 1st to go with the National Shawmut Company, Boston.

Mr. W. F. Kimball, recently with C. H. Kimball Co., has joined the organization as assistant to Mr. L. R. Nash. He will be with the statistics department temporarily while Mr. Nash is away.

Mr. Nash is in Texas.

Miss Mabel Bratton, for many years in the securities department and more recently secretary to Mr. J. W. Hallowell at Washington, has left the organization, to accept a position with Donham & Co. of Boston.

Miss Marion E. Grady, Simmons College, 1917, has joined the stenographic force of the treasurer's office.

Mr. F. A. Baker, M. I. T., 1919, and recently in the Naval Aviation Service, has joined the statistics department.

Gordon McInnis of the treasurer's office has left the organization to accept a position in New York.

Mr. Richard T. Sullivan has been appointed local manager of Puget Sound Electric Railway, Tacoma Railway and Power Company, Pacific Traction Company, and the Tacoma Division of Puget Sound Traction, Light & Power Company.

Assistant Treasurers' Conference

A triennial conference of the assistant treasurers of the companies under Stone & Webster management was held at the Exchange Club, Boston, on October 20, 21 and 22; Mr. H. B. Sawyer, treasurer of the Stone & Webster companies, presiding. The conference listened to an address by Mr. Sawyer on the scope, the opportunities and the methods of the assistant treasurers' work.

Mr. T. T. Whitney, Jr., of the Stone & Webster securities department, spoke on the work of that department.

Mr. N. H. Daniels of the statistics department explained the nature of his work, showing its points of contact with the work of the assistant treasurers. Excerpts from Mr. Daniels' remarks will be found elsewhere in this issue. And in like manner Mr. W. T. Crawford outlined the functions of the corporation department.

Mr. L. R. Nash addressed the conference on the subject of operating accounts and rate cases.

Each day there was a luncheon at the Exchange Club, with remarks by Mr. E. S. Webster and Mr. H. G. Bradlee of the firm of Stone & Webster, Mr. F. P. Royce, and others.

Following are the names of those attending the conference:

	Boston Office
H. B. Sawyer	" "
F. H. Farnham	" "
L. E. Eustis	" "
J. C. Leighton	" "
R. J. Hunter	" "
L. E. Jordan	" "
P. P. Thomas	" "
H. W. Hearty	" "
F. J. Babcock	" "
J. C. Poncelet	" "
C. L. Jones	" "
Manuel Condinho	" "
F. L. Hopkins	" "
H. R. Cate	" "
E. R. Adams	" "
A. F. Henderson	" "
B. E. Van Vliet	" "
W. W. Grayson	" "
W. E. Hawke	" "

P. L. Whitaker	Boston Office
W. E. Skulley	" "
R. C. Owers	" "
H. P. Dayton	" "
H. F. Neill	" "
P. R. Williams	" "
J. G. MacInnis	" "
Paul R. Fleming	Abington & Rockland
George A. Stiness	Blackstone Valley Gas & Electric
Gordon G. Spencer	Cape Breton
Laurens H. Crowell	Columbus
Fred W. Brownell	Connecticut Power
L. W. Richards	Eastern Texas
T. L. Small	Edison of Brockton
D. J. Hennessy	El Paso
Sidney E. Baker	Fall River
R. O. Himel	Galveston
Osman C. Johnson	Haverhill
William H. Kennedy	Houghton
J. Hugh Bissell	Mississippi River Power
Anson L. Berryman	Keokuk Electric
Earl C. Hart	Lowell
Francis J. Gannon	Northern Texas
Rabb N. Kirkland	Paducah
W. B. Anderson	Pensacola Electric
Francisco Liano	Ponce
William E. Wilmot	Puget Sound El. Rwy., Tacoma
C. F. Kirchhaine	" " Int. Rwy. & Pr., Everett
John C. Hector	" " Tr., Lt. & Pr., Bellingham
W. E. Best	" " " " " " Seattle
E. J. Seaborn	Reno Pr., Lt. & Wtr., Reno
Fred D. Gwynn	Tampa
F. P. Dexter	860 Stuart Bldg., Seattle
Frank Dabney	" " " "
K. F. Towler	Chicago, Wilmington
E. H. Prutzman	Chase-Shawmut
J. R. Blackett	Nova Scotia Tramways & Pr.

Baton Rouge, La.

Mr. W. M. Bird, superintendent of transportation of the Tampa Electric Company, spent several days with us recently.

Mr. C. E. Bell, for the past two and one-half years superintendent of the gas department, has been transferred to the Columbus (Ga.) Gas Light Company, as gas superintendent.

Mr. E. D. Stebbins, of the Fall River Gas Company, succeeds Mr. Bell as superintendent of the gas department.

Mr. J. W. Turner, of the commercial department, has resigned to accept a position with an automobile sales company in Miami, Florida. Mr. L. E. Delaroderie, of Baton Rouge, has succeeded Mr. Turner.

The Aluminum Ore Company has announced the purchase of 1980 additional acres of land joining its present holdings.

The Community Club held its opening recently with a dance. The grounds are those formerly occupied by the State Penitentiary and have been greatly beautified. The Pavilion is one of the largest in the south and is handsomely finished. The swimming pool and dressing-rooms are also practically completed.

Beaumont and Port Arthur, Texas

Mr. A. H. Sweetnam, of the Division of Construction and Engineering, has been in Port Arthur making a study of the power station situation in Beaumont and Port Arthur. Mrs. Sweetnam has accompanied Mr. Sweetnam while on his stay in Texas.

Mr. G. H. Clifford, of Fort Worth, paid us a visit during the month.

Mr. James F. McLaughlin, secretary to Mr. L. C. Bradley, Houston, Texas, spent a week-end in Beaumont during the month, the guest of Mr. and Mrs. A. F. Townsend.

Mr. and Mrs. L. W. Richards have been in Boston attending the meeting of assistant treasurers.

The Eastern Texas Electric Company was represented by Messrs. A. F. Townsend, S. T. Pike and P. E. McChesney, as captains of teams in the recent Red Cross drive in Beaumont.

Mr. and Mrs. J. H. Russell and little daughter, Carolyn, have returned from a pleasant vacation spent at Bonham, Texas.

Mr. A. F. Townsend was unanimously re-elected president of the Beaumont Country Club for another year.

Captain S. T. Pike, purchasing agent and assistant to the manager of the Eastern Texas Electric Company, severed his connections with the Stone & Webster Organization November 10th, to become the manager of the Guaranty Visible Measure Company, with headquarters in Dallas, Texas.

Mrs. H. L. Ganchan, secretary to Mr. A. F. Townsend, has returned to work very much refreshed from a vacation spent at Oakwood, Texas, where she and Mr. Ganchan spent some very pleasant hours fishing in Stanmire Lake. Mrs. Ganchan reports that she was the champion fisherwoman in the crowd. They were accompanied home by Mrs. Ganchan's mother, Mrs. M. J. Hammett.

Mr. S. P. MacFadden, of the railway department, was called to San Antonio, October 23d, by the death of an uncle. He accompanied the body to the State of Pennsylvania, and from there went to New York.

Mr. R. O. Himel, assistant treasurer of the Galveston Electric Company, formerly assistant treasurer at Beaumont, paid us a short visit during the month.

Bellingham, Wash.

Mr. J. C. Hector, accompanied by Mrs. Hector, has returned from Boston, having attended the convention of the assistant treasurers of Stone & Webster. Mr. Hector visited in New York and Chicago prior to his return.

Bill Berry and R. W. Richards are both back from France. Bill Berry has taken over the freight run on the P. N. T., and "Little Rich" is on the city lines. Both express themselves as glad to be back on real rails again.

T. H. King, formerly chief dispatcher, and wife, of Tacoma, were visitors of the Bellingham office.

Manager H. B. Sewall spent a few days in Vancouver during the celebration for the Prince of Wales.

J. F. Staggs, the jovial trackman, has returned from a week's vacation at Friday Harbor. Mr. Staggs has been with the company over five years and during that time never missed a day. He says he felt like a sixteen-year-old when he got back, and believes it was because he ate so many pheasant.

The girls of the various departments have finished cleaning up their new rest room. With new curtains, drapes and various "comforts," it is indeed a cozy place, and it is planned to have many enjoyable times there this winter.

Mr. Edward Dahl is in the East, where he was called by the illness and death of his wife. Mrs. Dahl has been a resident of Bellingham for many years. The many friends and co-workers of Mr. Dahl extend him their deepest sympathy.

Bruce E. Coulthurst, but lately appointed agent at Burlington, has recently married. Mrs. Coulthurst was formerly Maude Campbell, daughter of R. A. Campbell, a P. S. T. conductor. Mr. and Mrs. Coulthurst are now efficiently handling the affairs of the Burlington office.

L. E. Alverson, Sedro Woolley agent, is away on a few days' vacation. During his absence Mrs. Carrie Nye is assisting in the office.

Edward W. Brewster has taken George Downie's place as assistant agent at Mt. Vernon. Miss Rene Peck has also been appointed as an assistant in the Mt. Vernon office.

Mr. Fred H. Hilburn, jobbing bookkeeper, is a great pear fancier. Recently at the Western Washington Fair he had an exhibit of four varieties, and carried off honors. He received first prize for Anjou, second for President Drovard, and second for White Doyenne. As the exhibits were open for all entries west of the Cascades, Mr. Hilburn has reason to be proud of his pears.

The Bloedel-Donovan Lumber Mills, one of the largest mills in the State, has adopted the Shop Committee plan in all of their plants, the organization consisting of a joint council and two shop committees from each plant. The joint council will pass upon all matters referred to it by the company or shop committee, and its decisions or interpretations will be the general policy of the company. The council meets once a month at the general office of the company, and provisions are made for the settling of all grievances. This plan has met with a great deal of favor among the employees and so far has functioned very satisfactorily. It is the hope of both Mr. Bloedel and Mr. Donovan that the arrangement will prevent any future labor troubles among the timber workers.

The lumbermen are looking forward to a busy and prosperous year in 1920, with a heavy rail business and cargo trade limited only by the available tonnage.

On account of the diminishing forests of yellow and white pine the millmen say that the Northwest will have to supply the nation with an increased quantity of lumber. They also predict that the railroads alone

will buy hundreds of millions of feet for replacements and improvements that have been held up during government control.

The prosperous condition of Whatcom and Skagit Counties was reflected in the large attendance at the Whatcom County and Skagit County fairs. There was a large display of grain, fruit and vegetables, showing the wonderful productivity of the land in this part of the country, and the stock show, particularly the dairy cattle, represented some of the best blood in the world in Holstein, Guernsey and Jersey. The poultry industry was also well represented.

Indicative of the high prices paid for seeds in Skagit County, a two-year crop of cabbage seed on a five-acre farm brought the producer \$30,000, or \$6,000 per acre.

Canadian silver is now being discounted by all of the banks in Skagit County at ten per cent, although the Bellingham banks are still taking it at par. For some time currency has been discounted at rates varying from two to six per cent, but not until recently has it been necessary to discount silver.

Charles Raymond, storekeeper, and an employee of the company for ten years, has resigned to accept a position with A. S. Clark, one of the electrical supply companies in the city. Prior to his departure he was presented with a gold watch by his fellow employees, the presentation speech being made by Mr. Muffley.

Mr. Vittinghoff of the Boston office spent a week with us.

Mr. Gille, Mr. Somers and Mr. King were visitors from the Seattle office during the month.

El Paso, Texas

Mr. Alba H. Warren, manager, returned from his vacation on October 16th, after having spent a month visiting Chicago, home folks at Worcester, Mass., the Boston office, and attending the A.E.R.A. convention at Atlantic City. Mrs. Warren and Alba, Jr., will return from Pensacola some time this month.

We are glad to announce that Mr. Charles A. Brann, assistant claim agent, who was injured in an automobile accident, is back on the job. However, his right arm is in a sling, as the broken shoulder and collar bone require a good while to fully heal.

Mr. Alexander, lighting superintendent, and Mr. Dixon, claim agent, went after the quail in New Mexico, and were quite successful for the first time out. They also bagged a few more doves, for good measure.

Mr. J. B. White, superintendent of construction, Division of Construction and Engineering, in company with Messrs. Huff, Gill and Hearn of this office, took a duck hunt on a Saturday afternoon and Sunday during the month. They killed a few ducks and other wild game, and thoroughly enjoyed the outing.

Mr. D. J. Hennessy reports that the assistant treasurers' meeting in the Boston office, October 20th, 21st, 22nd, was most successful, proving most profitable as well as interesting. He spent three days visiting his family in Brookline, Mass., also a day at Keokuk, where Mrs. Hennessy was visiting, and returned by the way of St. Louis, Dallas and Fort Worth. Mr. Hennessy says that in spite of the excellent manner in which the

treasurers' department provided for the entertainment of the visiting assistant treasurers, it certainly seems good to get back to the sunshine of the West.

Mr. George H. Clifford, of Fort Worth, spent several days in El Paso the last week of the month. He left on the first for Boston.

Fort Worth, Texas

Mr. Victor H. Clarke, of the Division of Construction and Engineering, spent several days in Fort Worth during the month.

Mr. G. H. Clifford, manager, visited Beaumont, Houston and El Paso during the latter part of October.

Mr. F. J. Gannon, assistant treasurer, attended the Atlantic City Convention and also the Assistant Treasurers' Meeting, held in Boston during the latter part of the month. Mr. Gannon returned to Fort Worth, accompanied by Mrs. Gannon and their three children, who had been in the East during the summer.

Mr. and Mrs. L. E. Thorne have announced the birth of a daughter, on October 18th.

Mr. V. W. Berry, general superintendent, spent several days in Chicago during the latter part of the month.

Mr. Henry W. Harris visited his family in Boston while on a trip lasting several weeks.

Galveston, Texas

Mr. W. E. Wood, manager, attended the American Electric Railway Association convention at Atlantic City.

Mr. R. O. Himel, assistant treasurer, left on October 15th for Boston, where he attended the assistant treasurers' conference.

Mr. Clarke, of the Engineering Division, paid us a visit during the month.

Mr. Frank M. Smith, federal district director of war loans, recently announced that German cannon, captured in battle, had been awarded to the city of Galveston and to the counties of Travis and Smith for the greatest percentages of oversubscriptions to the fifth Liberty Loan.

Mr. Smith has directed that the trophies be shipped direct to the chairman of the county organization which conducted the campaign in each of these counties.

Haverhill, Mass.

During the evening of October 30th, the Gas Club entertained itself and friends with a Costume Party. Among those present were bolsheviki, farmerettes, tramps, clowns and a policeman. Corn stalks, pumpkins, doughnuts and apples made up the decorations; there was a feed, some dancing, the usual games and plenty of fun. Mr. Christian was chairman of the entertainment committee.

The Gas Club is now on a working basis and promises regular monthly programs of benefit and fun. Sixty employees have signed up, and all are taking an active interest in the success of the club. A hall has been chartered for one night each month. Several bowling teams are being formed preparatory to a lively tournament during the winter.

Laroy Ayer, a former employee, recently discharged from the United States Navy, called at this office a few days ago.

Houghton, Mich.

Mr. E. L. Milliken, manager of the Houghton companies for the last two years, has been transferred to Houston, Texas, as manager of the Houston Electric Company. Mr. S. B. Tuell, formerly with the Blackstone Valley Gas & Electric Company at Pawtucket, and lately at Hog Island, succeeds Mr. Milliken as manager.

The L. & T. Club held a meeting at the Douglass House on Wednesday, October 15th, and tendered a farewell to Mr. E. L. Milliken and a welcome to Mr. S. B. Tuell. Mr. Milliken was presented with a silver service set.

The young son of Mr. W. B. Latimer, chief engineer of the Houghton Companies, was struck and killed by an automobile operated by Mr. A. J. Ruhl, of Houghton, during August, and was taken to Savannah, Ga., for burial.

Mr. R. C. Hopkins, of Boston, has joined the staff of the Houghton Companies in the capacity of statistician, succeeding Miss Helen Nickerson, who was married to Mr. Adelbert Ford, of Ann Arbor, Mich., early in September.

Mr. Joseph Kratt, Mr. Stanley Odgers and Miss Grace Mitchell have joined the staff of the Houghton office accounting department.

Miss Daisy May Quay has resigned her position as stenographer at the Calumet office of the Lighting Company, and has returned to her home in Cheboygan, Mich. Miss Quay has been succeeded by Miss Alice Doyle, of Calumet.

Mr. J. C. Reed has resigned his position as storekeeper for the Lighting Company, and is now located at Flint, Mich. Mr. A. J. Hankey succeeds Mr. Reed as storekeeper.

Mr. H. T. Edgar and Mr. J. C. Leighton of the Boston office, and Mr. James V. Oxtoby, of Detroit, were business visitors in Houghton during September.

Mr. E. L. Milliken motored to Winnipeg, Manitoba, and other Canadian points, on his vacation trip during September. He was accompanied by Mrs. Milliken and family.

Miss Anna Tousignant, stenographer at the Houghton office, spent her vacation visiting relatives at Montreal, P. Q., Canada, during September.

The Safety First campaign, which was inaugurated several years ago in the Houghton Companies, has been revived. The Safety First organization consists of a Central Committee, made up of the following members: the manager (chairman), assistant treasurer, chief engineer, electrical engineer, superintendent of Traction Company, assistant superintendent of Traction Company, superintendent of Lighting Company, Northern Division, superintendent of Lighting Company, Southern Division.

The Central Committee will hold monthly meetings, at which it will receive suggestions from the four Local Committees — Houghton, Hancock, Laurium and Red Jacket, respectively — which latter will also hold monthly meetings. Each Local Committee will consist of a chairman

and six additional members from each respective district, to be chosen by the chairmen and approved by the Central Committee.

Electric Park was closed during the latter part of September, the attendance for the season being 36,725, of which 6,225 were children.

Mr. F. Norman Olm, ledger clerk in the Southern Division of the Lighting Company, has been transferred to the Lake Linden office.

Pictures of Hog Island were shown to the L. & T. Club members at Electric Park on September 17th. The pictures were accompanied by an address by Mr. Gervase Murphy, of the Houghton office sales department.

The Copper Country Agricultural Fair, held at the Amphidrome, Houghton, during September, drew its usual crowd. A feature of the fair was a booth belonging to the Houghton County Electric Light Company, demonstrating garage and auto accessories.

The Hancock Consolidated Mining Company has resumed mining operations, after having been closed down since April, 1919.

The Triskelion Club, of Houghton, composed of employees of the Lighting and Traction Companies, gave a pretty Hallowe'en dancing party in the Masonic Hall, Friday, October 24th.

Mr. S. B. Tuell, manager of the Houghton Companies, made a short business trip to Chicago during the month of October.

The Dee Bowling Alleys have been leased by twenty-five members of the Lighting and Traction Companies, and are now open to the public.

Mr. Wm. H. Kennedy, assistant treasurer of the Houghton Companies, attended the assistant treasurers' meeting held in Boston during October.

Mr. John Ralph, Jr., superintendent of the Traction Company, attended the American Electric Railway Association convention at Atlantic City, N. J., the Safety Congress at Cleveland, Ohio, and Hog Island Shipyard at Philadelphia, Pa., during October.

A new stock room for heavy line material, such as cross arms, wire, and line switches, has been opened in the Haas' Bottling Works building on the basement floor. The second floor of this building is now used as a garage for the Bus Company and Lighting Company cars. The attic is occupied by the Lighting Company, and is used for storing obsolete supplies.

Mr. C. McCleary, of Detroit, has organized the Electrical Contractors Union here. The purpose is to cause a closer union between dealers and the central station.

Calumet & Hecla Mining Company's flotation plant is completed, and in a short time will be in full swing.

Houston, Texas

Mr. E. L. Milliken, formerly manager of the Houghton County Traction Company of Houghton, Michigan, arrived on October 29th to assume the duties of manager of the Houston properties, succeeding Mr. David Daly, who has been appointed district manager of the Mid-West properties, with headquarters at Keokuk, Iowa. Mr. Milliken was accompanied by Mrs. Milliken and their two children.

Mr. Daly and his family returned from a vacation in Boston, where

they visited Mr. Daly's parents. While on his vacation, Mr. Daly visited the Boston office, also the various properties shortly to come under his jurisdiction.

Mr. Daly's loss as a citizen of Houston and as a hard worker for the community was attested in talks by a number of Houston business men at the Kiwanis Club on October 29th, when he was the honor guest.

On October 29th, the employees of both companies gathered at the Trainmen's Club House for a farewell meeting with Mr. Daly. At this meeting farewell speeches were made by trainmen, shopmen, power house men and department heads. Some of these talks may not have been masterpieces of oratory, but they were such as would have touched the heart of any man. Mr. Daly was presented with a beautiful watch and an autograph album containing the signature of each employee.

George H. Clifford, manager of the Northern Texas Traction Company, visited Houston during the month.

F. J. Bennett, master mechanic, spent his vacation with his parents in Tennessee.

Bert Gray, claim agent, and Albert T. Kunz, purchasing agent, returned from a two weeks' vacation, two days of which were spent in San Antonio as guests of the San Antonio Public Service Company. The remainder of the time was spent in Marlin, Texas, which is a health resort.

R. B. Lancaster, chief clerk of the accounting department, has been on a hunting trip in Wisconsin.

Mrs. J. W. Landrigan, wife of our chief inspector, has returned from a very pleasant vacation with Mr. Landrigan's parents in Maine.

Mr. Harry Sweetnam of the Betterment Division of the Boston office, and wife, visited Houston during the month.

An innovation in Houston for relieving the traffic congestion on our Main Street was the placing of safety zone platforms, by the order of Mayor Ammerman. These platforms are placed on the street corners where the cars stop to load and discharge passengers. They are approximately 4 inches high, 3 feet wide and in lengths of 50 to 100 feet. On the corner where only one car stops at a time a 50-foot platform is laid, while a platform 100 feet in length is used where two cars might stop at the same time. On corners where these platforms are installed, vehicles are allowed to pass a car while loading or discharging passengers. While these platforms have only been in use a few days, we find that our cars pass through the main belt in less time than formerly.

Jacksonville, Fla.

Mr. W. F. Orr, of the betterment division, was in Jacksonville, stopping over the major part of one day, on his way to Tampa.

Mr. J. S. Harrison, claim agent, and Mr. A. B. Bowman, master mechanic, were on their vacation during the month of October, both attending the convention at Atlantic City at the termination of same.

Mr. Donald W. Kerr, cashier, was transferred from this company to the Key West Electric Company.

Mr. C. W. Edwards, of the Pensacola Electric Company, formerly assistant superintendent of transportation of this company, was in the city for a few days during the week ending October 17th.

Mr. T. J. Hanlon, of the Tampa Electric Company, was in the city for a day.

Mr. W. M. Bird, superintendent of the Tampa Electric Company, passed through this city October 28th on his way to Pensacola.

Mr. F. J. Gwynn, assistant treasurer, Tampa Electric Company, stopped over October 29th, on his way back from Boston.

Keokuk, Iowa

During the early part of October the Electrical Apparatus Committee of the National Electric Light Association held a meeting in Keokuk for the purpose of discussing all forms of electrical apparatus, the object being to secure better designs and appliances. The committee consisted of members from every section of the United States.

On October 18th the High Tension Club held its third annual Turkey Shoot and Fish Fry at Cedar Glen. There were ninety-five members in attendance.

The following members were successful in winning a turkey:

W. Waggonner, with a score of 46 out of 50	
R. L. King " " " " 44 " " 50	
W. E. Miller " " " " 43 " " 50	
C. A. Sears " " " " 41 " " 50	
A. Davis " " " " 40 " " 50	
A. J. Sears " " " " 23 " " 50	

During the afternoon Mr. C. A. Sears offered the turkey that he had won for another shoot-off and this was won by P. F. Gregg of the Mississippi River Power Company engineering department.

Mr. Willis Wood was in charge of the Fish Fry and a very appetizing spread was placed before the club members.

A great deal of credit is due the committee in charge of general arrangements. They certainly succeeded in staging a splendid entertainment.

Mississippi River Power Company

Mr. J. H. Bissell, assistant treasurer, has returned from a trip to Boston, having spent three weeks there.

Mr. P. F. Coombs has left this company to take a position with the Union Electric Light and Power Company of St. Louis.

Keokuk Electric Company

Mr. Charles L. O'Loughlin, new superintendent of the gas department, arrived in Keokuk on October 2nd.

Mr. A. L. Berryman, assistant treasurer, attended the meeting of assistant treasurers in Boston, from October 20th to October 22nd.

Mr. I. R. Carlson, solicitor, attended the Electric Show in Chicago from October 20th to October 23rd.

The Messengerville extension to our lighting lines was completed during the month of October.

Miss F. U. Norman, cashier, took her vacation during the month of October.

Lowell, Mass.

Mr. Ralph F. Blanchard, formerly connected with the U. S. Shipping Board as marine engineer, has joined the steam department of this company as assistant chief engineer.

Mr. Ernest Mountain, for several years associated with the commercial department of this organization, has resigned his position and accepted an opening with the Hurley Machine Company, as salesman for the Thor electric washing machine.

Regular examination of the company's books is being made by Mr. A. F. Henderson, Mr. R. Owers and Mr. Howard Neill of the auditing department.

Mr. E. C. Hart, our assistant treasurer, has recently been elected a member of the board of directors of the Lowell Co-operative Bank, the leading co-operative bank of this city.

Paducah, Ky.

The properties of The Paducah Light & Power Company were acquired by The Paducah Electric Company and that of The Paducah Traction Company by The Paducah Railway Company on October 1, 1919. We commenced operating under our new street railway franchise, which included a 6c fare for the first year of the life of the franchise. The properties, which for a year were in the hands of a receiver, are now under the management of Stone & Webster.

Mr. R. R. Ralston, commercial agent of the company for the past two years, resigned to take a position with the Electric Appliance Company.

Mr. R. N. Kirkland, assistant treasurer, attended the assistant treasurers' meeting at Boston.

Mr. H. T. Edgar, division manager, and Mr. David Daly, district manager, visited Paducah on October 1st and remained for three days.

The International Shoe Company, recently located in the city, is now employing 200 people and is manufacturing shoes.

The river has been particularly low for this season and practically all river traffic has stopped on the Ohio. The river packets continue to operate on the Cumberland and Tennessee Rivers. The Government dredges are deepening the channel on the Ohio River around the Cottonwood Bar about two miles north of Paducah, for the purpose of making the big river navigable between here and up-river points for the balance of the season.

The tobacco crop has been exceptionally good and the market is high.

There is a noticeable amount of improvement going forward, especially in the business district, and the city is more prosperous than at any time in its history.

Savannah, Ga.

Mr. L. H. Crowell attended the recent conference of assistant treasurers at Boston.

Mr. Hutchins returned from Baltimore after spending a few days with relatives at that place.

Seattle, Wash.

What will eventually be one of our most important coal mine contracts was recently signed with the Pacific Coast Coal Company. It provides for all electrical power requirements of the briquetting and coal-crushing plants at Briquetville, near Renton, the mine at Coal Creek, near Newcastle, and the mine at Issaquah. The new contract will supersede our old contract at the briquet plant at once, and later on our existing contract at Issaquah.

The briquet plant and the mine at Issaquah have previously been described. Coal Creek Mine is about five miles northeast of our Renton substation in a direct line, and about three miles east of Lake Washington, on a branch of the Columbia & Puget Sound Railway. The town of Newcastle, where most of the miners live, is less than a mile northwest of the mine. This coal field was one of the first to be developed in the State of Washington, and has been worked almost continuously since its first opening.

The immediate purpose of the new contract is to secure power for de-watering Number Three Mine at Coal Creek, which was flooded years ago as the result of a bad fire. One slope has not been worked since 1894, and the other not since 1901. It is estimated that a minimum of 450,000,000 gallons of water will have to be raised to completely free that part of the mine and permit the resumption of work. The present steam plant cannot supply the power required.

Current will be supplied by us from Renton substation at 13,200 volts and delivered to the Coal Company at Briquetville, where it will be metered. The Coal Company has just completed a 13,200-volt transmission line from Briquetville to Coal Creek, about six miles in length.

Word has been received in Seattle of the death in October, at New York, of Morton Ramsdell, formerly sales manager of this company following the consolidation of the Seattle Electric Company and the Seattle-Tacoma Power Company. Mr. Ramsdell came to the organization from the last named company. After separating himself from Stone & Webster activities, Mr. Ramsdell went to New York and was later heard of at Algiers, and still later from Los Angeles, Cal. He was connected with a financial concern in New York at the time of his death. He was about 55 years of age.

The Hydroelectric and Technical Committee of the Northwest Electric Light and Power Association has been changed to the Governing Committee of the Hydroelectric and Technical Section. The new constitution carries out the section plan as it is done by the National Electric Light Association, each having its own governing committee.

President Balland of the National Electric Light Association was a recent Seattle visitor.

The National Electric Safety Code is about to be put into final form. It was originally compiled by the Bureau of Standards and then submitted to the various commissions and utilities of the country. Messrs. Nims and Schofield represented this section at the conference which finally whipped the measure into shape. As it now stands it covers all branches of the electrical industry complete from lamp socket to a 50,000 horse power steam turbine plant.

The proposed inspection trip of the local section of the A.I.E.E. to Cedar Falls, which was intended as the feature of the October meeting, was postponed until the early part of next year on account of the delay in the arrival of the electric locomotive on the western end. The first locomotive is expected to arrive in December and will be put into immediate service handling freight, and this will ultimately develop into complete electrical operation. At the October meeting Mr. G. Swett presented his very interesting paper on "Motor Driven Auxiliaries on Motor Ships."

Sydney, Nova Scotia

The manager, Mr. Curtis, accompanied by Mr. Walter Crowe, the local solicitor for the company, enjoyed a motor trip to Halifax on company business the latter part of August. On September 30th, Mr. Curtis left to attend the Annual Convention of the American Electric Railway Association held at Atlantic City. On his way to and from the convention he visited New York and Boston, calling at the Boston and New York offices of Stone & Webster.

Mr. Spencer, local assistant treasurer, attended the meeting of assistant treasurers in Boston the latter part of October. On the conclusion of this meeting he visited Montreal and other places of interest in that vicinity.

Miss Helena Hines returned to her work the first of October after three months' leave of absence.

Miss Barbara McNeil, recently employed in the office of the railway department of this company, has left to continue her musical education in the Ladies' Seminary of Acadia University.

Miss Eva Weymouth has taken Miss McNeil's position in the railway department office.

Clarence Barrett, formerly in the meter department of this company, and who was recently discharged from the Canadian Expeditionary Forces, has accepted a temporary position in the accounting department of this company.

Gordon Townsend, Rod McVarish, Tom Reid and Kenneth McLeod have recently left the light and power department of this company to accept similar positions with other companies.

Tacoma, Wash.

Effective November 1, 1919, Richard T. Sullivan was appointed manager of Tacoma Railway and Power Company, Puget Sound Electric Railway, Pacific Traction Company and Tacoma Division of Puget Sound Traction, Light & Power Company, succeeding Louis H. Bean, who resigned on September 1st to take up work in New York.

Mr. Sullivan, for the past five years, has been general manager of the Mahoning & Shenango Railway & Light Company at Youngstown, Ohio, and prior to that time for many years was general superintendent of railways in Houston, Texas.

Mr. Scott Z. Henderson, Tacoma attorney, has also been appointed as an executive of the Tacoma Companies.

Mr. W. E. Wilmot returned November 2nd from the assistant treasurers' meeting held in Boston.

Miss Margaret Smith has returned to her position in the department of investigation and adjustments, after a year's service overseas with the American Red Cross.

LIBRARY OF STONE & WEBSTER

Recent Accessions

(10) Civil Engineering

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- 596 Waterproofing engineering for engineers, architects, builders, roofers and waterproofers. Joseph Ross. 1st ed. New York [c1919]. 442p, 6x9, illus. *077.R7339
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- 598 Surface water supply of the United States, 1917: Part VII. — Lower Mississippi River Basin. Wash., 1919. 33+p, 6x9, illus. WSI 457
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(20) Electricity and Chemistry

- 603 Electrolysis in concrete. Technologic Paper of the U. S. Bureau of Standards. No. 18. 2d ed. Issued Aug. 1, 1919. Wash., 1919. 7x10, 142p, illus. *6898.Tp18.2d ed.
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- 607 Chemical calculations. R. H. Ashley. 2d ed. New York, 1918. 276p, 5x7 $\frac{1}{2}$, illus. *074.As335
- 608 Chemiker-Kalender, 1917. Vols. 1 and 2. Rudolf Biedermann. Berlin, 1917. Vol. 1, 452p; Vol. 2, 728p; 4x6. *074.C47.1917. Vols.1&2

(40) Gas and Mining

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- 610 Coal and its scientific uses. W. A. Bone. New York, 1918. 491p, 6x9, illus. *0742.B641
- 611 Weekly report on the production of bituminous coal... Sept. 13, 1919. No. 113. U. S. Geological Survey. Wash., 1919. vp, 9x15. *6874.075c. No.113

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- 612 The 3c exchange case: President Mitten's statement. Northwestern Business Men's Association vs. Philadelphia Rapid Transit Co. Hearing before Public Service Commission of Pennsylvania at City Hall, Philadelphia, Sept. 19, 1919. Includes also, Philadelphia's answer to the Traction Question by T. E. Mitten. [1919]. 18p, 6x9, illus. *1891.R181.025m
- 613 The safety car... Special Publication No. 1614. Oct., 1919. N. H. Callard. East Pittsburgh, 1919. 46p, 8½x11. V*07127.C1319
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- 617 Some observations on the local traction system. P. J. Kealy... Sept. 16, 1919. Kansas City, 1919. unpag., 6x9. *0221.K1928

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- 631 Statistics of Public Utilities for year 1917. New Jersey Board of Public Utility Commissioners. Union Hill, 1919. 148p, 6x9. *1904.1917st
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- 652 Work done and work doing: construction contracts completed or in progress. June, 1919. Stone & Webster. Boston [c1919]. 24p, 3½x6½. *610.W89.6/19
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- 654 Men who are making America. 4th ed. B. C. Forbes. New York [c1919]. 442p, 6x9, illus. *092.F741
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- 656 A chronology of important inventions or discoveries. Choralcelo Development. unpag., 7½x8½. *09.C4569
- 657 "Oil Trade Journal" and "Petroleum Age." Subscriptions for these placed by Library — to begin with issues of Nov., 1919

(97i) Industries

- 658 The world cotton conference in New Orleans. 1919. Supplement to Manufacturers' Record, Oct. 23, 1919. 100p, 9x12. *0271. M3197
- 659 International Trade Conference at Atlantic City, Oct. 22, 1919. Chamber of Commerce of the U. S. 30p, 6x9. *6800.C35.093

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- 660 The relation of the shrinkage and strength properties of wood to its specific gravity. J. A. Newlin. U. S. Department of Agriculture, Bulletin No. 676. Professional Paper, July 16, 1919. Wash., 1919. 35p, 6x9. *6880.B676
- 661 The orifice as a means of measuring flow of water through a pipe. Bulletin No. 109, Dec., 1918. University of Illinois Engineering Experiment Station. Urbana, 1918. 56p, 6x9, illus. *0725. Il6om
- 662 Annual report of Massachusetts Bank Commissioners, 1918. Part I: savings banks...trust companies...Part II: co-operative banks... Boston, 1919. v. p, 6x9. *1400.B22.Pts.1&2

COUPONS AND DIVIDENDS DUE

		Per Cent.
Nov. 1,	Cape Breton Electric Company, Limited, Preferred Stock, 6 per cent.	3
Nov. 1,	Cape Breton Electric Company, Limited, Common Stock	1½
Nov. 1,	Eastern Texas Electric Company 5s, 1942.....	2½
Nov. 1,	*Edison Electric Illuminating Company of Brockton, Capital Stock	2
Nov. 1,	*Fall River Gas Works Company, Capital Stock	3
Nov. 1,	Galveston Electric Company 5s, 1940.....	2½
Nov. 1,	Houghton County Electric Light Company, Preferred Stock, 6 per cent.	3
Nov. 1,	Houghton County Electric Light Company, Common Stock	2½
Nov. 1,	Jacksonville Electric Company 5s, 1927.....	2½
Nov. 1,	*Lowell Electric Light Corporation, The, Capital Stock	2½
Nov. 1,	Mississippi River Power Company (Debentures) 6s, 1919 (Principal also due)	3.73
Nov. 1,	Paducah Electric Company (Debentures) 6s, 1939.....	3
Nov. 1,	Pawtucket Gas Company of New Jersey, The, 4s, 1932.....	2
Nov. 1,	Ponce Electric Company 6s, 1927.....	3
Nov. 1,	*Public Service Investment Company, Preferred Stock, 6 per cent.	1½
Nov. 1,	Railway & Light Securities Company 5s, First series, 1935; Second and Third series, 1939; Fourth series, 1942; Fifth series, 1944; Sixth series, 1946.....	2½
Nov. 1,	Seattle Railway Company, The, 5s, 1921.....	2½
Nov. 1,	*Sierra Pacific Electric Company, Preferred Stock, 6 per cent.	1½
Nov. 1,	Whatcom County Railway & Light Company 5s, 1935.....	2½
Nov. 15,	*Keokuk Electric Company, Preferred Stock, 6 per cent.	1½

*Payable quarterly.

		Per Cent.
Nov. 15,	*Tampa Electric Company, Capital Stock....	2½
Dec. 1,	Baton Rouge Electric Company, Preferred Stock, 6 per cent.....	3
Dec. 1,	Baton Rouge Electric Company, Common Stock, 8 per cent.....	4
Dec. 1,	Berkshire Power Company, The, 5s, 1934....	2½
Dec. 1,	Blackstone Valley Gas and Electric Company, Preferred Stock, 6 per cent.....	3
Dec. 1,	*Blackstone Valley Gas and Electric Company, Common Stock.....	2
Dec. 1,	Bridgewater Electric Company, The, 5s, 1920	2½
Dec. 1,	*Connecticut Power Company, The, Preferred Stock, 6 per cent.....	1½
Dec. 1,	Edison Electric Illuminating Company of Brockton 5s, 1930.....	2½
Dec. 1,	Edison Electric Illuminating Company of Brockton 6s (Coupon Notes), 1919, Principal also due.....	3
Dec. 1,	*Key West Electric Company, The, Preferred Stock, 6 per cent.....	1½
Dec. 1,	*Northern Texas Electric Company, Common Stock.....	2
Dec. 1,	Pawtucket Gas Company of New Jersey, The, Preferred Stock, 5 per cent.....	2½
Dec. 1,	Puget Sound Power Company 5s, 1933.....	2½
Dec. 1,	Puget Sound Traction, Light & Power Com- pany 7s (Coupon Notes).....	3½
Dec. 1,	Tampa Electric Company 5s, 1933.....	2½
Dec. 15,	*El Paso Electric Company, Common Stock..	2½

*Payable quarterly.

Dividend rates are based on last declaration.

Quotations on Securities

OF

Companies under Stone & Webster Management

NOVEMBER 1, 1919

The Securities Department executes orders on commission for those wishing to purchase or sell.
Requests for information in regard to the companies will be answered promptly.

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Ab. & Rock., The El. { Notes, July, 1923 Lt. & Pr. Co. of	7%	99½	No	Pref	8%	120
Baton Rouge { Bonds, 1939 Elec. Co. { Notes, Jan., 1920	5% 6%	85 100	6%	78		.....
Blackstone Valley Gas & Elec. Co.	5%	92½	*6%	95		
Cape Breton Elec. Co., Ltd.	5%	83	6%	75	3%	25
Central Mississippi Valley Electric Properties	No	Bonds	*6%	40		5 N
Chicago, Wilmington & Franklin Coal Co.			*6%	90		100
Columbus Elec. { Bonds, 1933 Co. { Notes, July, 1922	5% 6%	85 97½	6%	75		23
Columbus Power Co., The	5%	92		.....		.....
Connecticut Power { Bonds, 1963 Co., The { Notes, Jan., 1920	5% 6%	90 100	*6%	83		
Connecticut Valley { Serial Bonds Lumber Co. { June, '22-'34	6%	97½				
Eastern Texas { Bonds, 1942 Elec. Co. { Notes, Aug., 1921	5% 7%	86 100	*6%	83	5%	57
Edison Elec. Illg. { Bonds, 1930 Co. of Brockton { Notes, March, 1921 { Notes, Dec., 1919	5% 5% 6%	100 100 100	No	Pref	8%	125
El Paso Elec. Co. { Bonds, 1932 { Notes, 1920	5% 6%	91 99½	6%	85	10%	80
Fall River Gas Works Co.	No	Bonds	No	Pref	12%	175
Galveston Elec. Co.	5%	83		.....		.....
Galveston-Houston { Notes, March, 1922 Elec. Co. {	7%	99½	*6%	63 B L		15 B L
Galveston-Houston Elec. Ry. Co.	5%	85	No	Pref		.....
Haverhill Gas Light Co. (Stock par value \$50)	No	Bonds	No	Pref	9%	55
Houghton County Elec. Lt. Co. (Stock par value \$25)	5%	92½	6%	18	5%	12
Houghton County St. Ry. Co., The	5%	99	No	Pref	No	Com

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Houghton County Traction Co.	5%	85	*6%	40		5
Houston Elec. Co.	5%	96 ^B / _L		.....		.....
Jacksonville Elec. Co.	5%		No	Pref	No	Com
Jacksonville Traction Co.	5%					
Keokuk Electric Co.	6%	100	*6%	85		.....
Key West Elec. Co., The	5%	80		.....		.....
Lowell Elec. Lt. Corp., The	No	Bonds	No	Pref	10%	155
Mississippi River Power Co.	5%	78 ^A / _B		52½ ^A / _B		12 ^A / _B
Northern Texas Elec. Co.	5%	80	6%	74 ^B / _L	6%	60 ^B / _L
Northern Texas Traction Co.	5%	91	No	Pref		.....
Pacific Coast Power Co.	5%	90	No	Pref	No	Com
Pensacola Elec. Co.	{ Bonds, 1931 Notes, Jan., 1921	5% 7%	80 99	50		5
Ponce Elec. Co.		6%	95	No	Pref	.....
Public Service Investment Co.	No	Bonds	*6%	70		20
Puget Sound Elec. Ry.	5%	85 ^B		.....		.....
Puget Sound Power Co.	5%	92	No	Pref	No	Com
Puget Sound Trac., Lt. & Pr. Co.	{ Notes, 1921	7%	100	*6%	55	12
Railway & Light Sec. Co.		5% 5% 5% 5% 5% 5%	95 92½ 92½ 91½ 91½ 91	*6%	83	6% 75
Savannah Elec. Co.	5%	57 ^B / _L				
Seattle Elec. Co., The	{ 1st Mortgage, 1930 Cons. & Ref., 1929 Seattle-Everett, 1939 The Seattle Ry., 1921	5% 5% 5% 5%	96 ^B 90 ^L 85 97	No	Pref	No Com
Sierra Pacific Elec. Co.		{ Notes, Feb., 1922	7%	98½	*6%	50 4
Tacoma Ry. and Pr. Co.	5%	80	No	Pref		.....
Tampa Elec. Co.	5%	93	No	Pref	10%	†110
Whitcom County Ry. & Lt. Co.	5%	85	No	Pref	No	Com

Quotations are approximate. All stocks \$100 per value unless otherwise specified.

*Cumulative. †Ex-Dividend. A. Listed on London Stock Exchange. B. Listed on Boston Stock Exchange. L. Listed on Louisville, Ky. Stock Exchange. N. Common shares have no par value. X. Ex-rights.

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STONE & WEBSTER

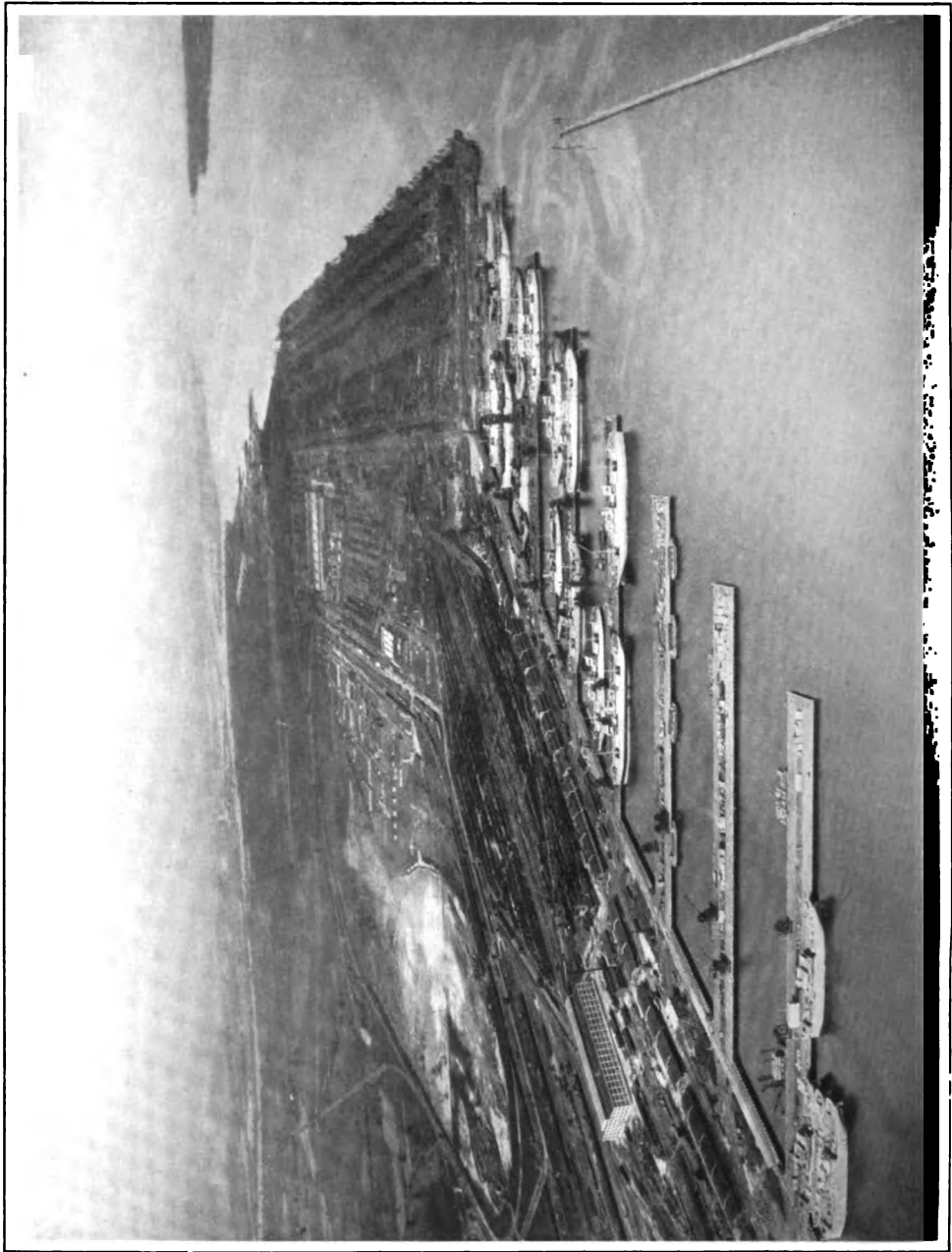
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Up to December 1, 1919, sixty-one ships were delivered by this shipyard, fifty-eight of which had actually travelled about 714,000 miles, a distance equal to a trip to the moon and back, with nine times around the world (thrown in

STONE & WEBSTER

JOURNAL

DECEMBER, 1919

EDITORIAL COMMENT

The Capitalization of Labor

In the Bulletin of the National City Bank of New York for November, 1919, was printed the following letter:

Dear Sirs:

Your issue enclosed "Economic Conditions," etc., under date "New York, June, 1919," on page 14 states that in 1914, "the amount of capital in manufacturing within the United States amounted * * * * for each person employed to * * * \$2,848." This when discussing labor conditions.

Has it never occurred to you that the "production cost" of the person employed is *capital used in the business*; this to the same extent as is capital invested in the business plant; and that the use of that capital is an absolute essential to the business?

If this be conceded, is it not reasonably certain that employees have contributed to, used in, the business of manufacturing a larger amount of capital than those whose moneys have provided the industrial plants? That is, is it not reasonably certain that the average "production cost" of the employee has been in excess of \$2,848?

Those engaged in a common business have usually exercised control of it in the ratio that their capital was used. Such being the custom, what good reason can be assigned for excluding the owners of the *employees* "production cost" capital from a fair share; a share based upon their capital used in the business; of the direction of the business in which they are engaged; and to which their contribution of their capital-production cost is an absolute necessity?

And what good reason can be assigned for excluding the owner of the employees' capital, so contributed and so used, from *any* benefit that is accorded to the owner of *any* capital that is otherwise contributed and so used?

I would be very much pleased if your ideas in this connection shall be expressed in your next issue and a copy be mailed to me.

Yours truly,

(Sgd.) GEORGE W. TOWLE,
29 California Street,
San Francisco, Cal.

Despite the manifest absurdity of this letter, the National City Bank printed a painstaking reply. What it says is necessarily elementary; but considering the vague ideas which the average mind has regarding economic subjects, that is undoubtedly the best way to answer the writer of the above letter. It seems to us, however, that the National City Bank might have saved a bit of good white paper by simply denying the facts as presented by its correspondent.

While it may be true that the "production cost" of the person employed is capital used in the business, it is not at all true that this is "to the same extent as is capital invested in the business plant." A good many years ago there used to be a story in the reading book about a pudding that it took a million persons to make. Of course the "production cost" of each one of the million was, in a way, capital used in the business of putting the pudding on the table. Now, following the reasoning of the City Bank's correspondent, the farm hand who worked for the farmer who produced the wheat provided part of the capital for the farmer, and should have had a voice in dictating the policy of the farm. When the wheat became part of the capital of the miller the farmer and his farm hand should have had a voice in dictating the policy of the mill. Necessarily, the miller, together with the farmer and the farm hand, as they provided part of the capital for the person performing the next operation, should have had a voice in dictating the policy of his business. When the flour was manufactured it had to be carried to market in order that eventually it might reach the hands of the person who made the pudding. So we begin the process all over again. Suppose it was carried in a cart. The laborers who shoveled the dirt to make the road over which the cart traveled provided capital and should have had the right to a voice in the business of the contractor who was engaged to provide the road; he, in turn, with the laborers, should have had a voice in the management of the turnpike company or the town that owned the road, and the latter should have had a voice in the business of the carter who carried the flour over the road. The same reasoning may be employed regarding all the people who from start to finish had anything to do with making and operating the cart.

This reduces the argument to an absurdity. The theory may be fine, but as it is absolutely unworkable it is not worth a moment's consideration. Take the case of a great steel plant employing thousands of men. The National City Bank's

correspondent would claim that as their "production cost" is capital used in the business they should have a share in the management. But why more than the miners who produced the iron ore, the coal and the other ingredients which the operatives in the steel mill employ in their labor? The ore, the coal and the other ingredients all represent labor; that is what the steel company acquired when it paid for them. It acquired exactly the same thing when it hired the men to work in the steel plant, the only difference being that in the latter case the purchase was made directly, and in the former through an intermediary, which intermediary, however, should, with all the intermediaries who preceded him in the process, have a voice in the management of the steel plant. That is, if the logic of the National City Bank's correspondent is sound.

We may as well allow ourselves to be as absurd as possible in discussing this matter, for it is not possible to discuss it in any other way. So we will state the case in another way. If the "production cost" of the person employed is capital used in the business, it is pertinent to ask if he is indebted to anyone for any of the capital involved in his "production cost." Well, all laborers are born into this world as mere infants. They have to be raised to manhood at the expense of somebody else. Somebody else stands at least part of the expense of their education. A great many persons contribute to the expense of the schools where they get their education. So it looks as if the employee had no right to claim anything like the whole of the capital involved in making him a productive factor in a business establishment where he is hired on wage.

But, besides the persons just indicated to whom he is possibly indebted, there are the people who have actually employed him in the past. A workman is not like Minerva—who sprang full armed from the brow of Jove. He acquires the skill which he employs in the factory, under the high-sounding name of "production cost," largely at the expense of his employer, who gives him a chance to learn the business and pays him more than a fair wage while he is making all the mistakes and spoiling all the goods incidental to acquiring a grasp of the work to which he has committed himself. The employer who did this may not be his present employer, but his present employer is probably doing the same thing for other men whom other employers will hire, so that the situation may be said to average itself very justly. On the whole, the

amount which employers have contributed to building up the "production cost" of the labor element is probably far in excess of the amount which the labor element has itself contributed to building up its "production cost."

Now let us assume that the correspondent is right, and that the use of the capital involved in the "production cost" of the laborer is an absolute essential to the business. By what means does the employer obtain the use of this capital? Let us assume what is not really the case, that the laborer has himself created all the capital represented by his "production cost." By what means does he inject this capital into the business of the person who employs him? In exactly the same way that the person who has produced iron ore injects his "production cost" into the business of the steel mill; or in exactly the same way that the farm hand who helped the farmer to grow the wheat that eventually entered into the pudding that it took a million people to make, projected his capital into the cost of the pudding to the person who ate it. If there is any soundness at all in the view of the National City Bank's correspondent, the person who sells another person anything that involves any labor becomes a partner in the business of the person making the purchase. The miller, for example, or the wholesale dealer in flour, should have the right to a voice in the conduct of the business of the bakery. But what baker would admit this claim?

Suppose the case of a city office building—a sky-scraper, for example. A vast amount of labor is employed in constructing this building, and a good deal of labor is necessary in running it after it is constructed. This labor, we will say, represents "production cost," and we may, perhaps, infer that it is capital invested in the business plant. Should all housewrights, masons, janitors, elevator men and char women be represented on the board of directors of the corporation owning and running the building? Perhaps we shall be told that the housewrights, masons, etc., take their capital out of the business when the work of construction is finished, and that they should have no voice in the management of the business plant. But what about the janitors and elevator men, etc.? They are still with the concern. Should they be represented in the management? To go back to the first class of labor; how does their case differ from that of the man who helps make a steel billet or who weaves a yard of cloth? When the billet is made it is made, and the operative is through with the transaction; when the yard of

cloth is woven the transaction is finished. Does the fact of a continuous performance make any difference in the theory?

A productive industry represents two things: the plant and men who operate it. The functions of these two things are radically different; as radically different as the building of a house and the living in it. A man wants a place to lay his head. He lacks the money to build a house, but someone who has money builds one for him, and lets him live in it at a price. The man who puts up the money buys lumber and brick and cement and a hundred other things and makes a house. The man who lives in the house sleeps and cooks and entertains his friends. No two sets of functions could be more widely differentiated. But they are no more widely differentiated than the building and equipping of a mill on the one hand and the running of the machinery in it on the other. The man who builds the mill takes money which he has acquired by hard work, or has inherited from someone who has acquired it by hard work, and builds and equips the mill. If he cannot make money in operating it, or if he cannot sell it to someone who can run it at a profit, either for the original purpose or for some other, he suffers a permanent loss. He is like a man who has a house for rental in a community that is running down hill. At the start he finds a tenant who stays with him and pays rent so long as it is to his advantage to do so. When it is not, the tenant moves away and hires a house which he can use to advantage. The tenant may not and probably does not lose a cent. The landlord may lose thousands of dollars. The man who builds the mill cannot get his money out. The employee in the mill can draw out the capital represented by his "production cost" the moment it is to his advantage to do so.

We shall not exaggerate very much if we say that the owner commits himself in perpetuity and the employee only from day to day. This distinction is of itself sufficient completely to vitiate the theory of the National City Bank's correspondent.

The correspondent asks, "What good reason can we assign for excluding the owners of the *employees' production cost capital* from a fair share in the control of the business?" If the facts were as stated, there would be no good reason. But the facts have been twisted. What is capital? In a way, capital is anything that can be used to purchase something else. A good heart and strong sinews are the capital of a Marathon runner, as they enable him to win a race and obtain a prize. A trim

figure and pretty face are capital for a chorus girl, as they enable her to get a living and frequently to marry a duke. Skill in running a machine is capital for a machinist, as it enables him to make a living and support his family. Money to build a factory and to pay the wages of the operatives until they produce something to sell and until it is sold is also capital; but the person who uses capital in this way has just as definite profit in mind as the Marathon runner or the chorus girl or the machinist. To be sure, when we use the word capital in the business world, we mean the last mentioned kind of capital, but the other kinds are just as truly capital. The aim is the same in every case. Somebody sells something for something else, or at least tries to. The runner sells his heart and his sinews for the time being to the person who puts up the prize; the chorus girl sells her face and figure to the amusement loving public and the duke; the machinist sells his skill immediately to the owner of the factory he works in, and indirectly to thousands and millions of people who use the article he makes.

It is all a question of sale. A mill involves the sale of capital by the owner to the employees who work in it, and the sale of labor by the employees to the owner. It is not a partnership. More properly speaking it is a market place where each party hands over to the other what he has to sell. The owner sells to the employees the right to use the machines and also sells to him the right to draw on him, the owner, in advance for an amount equal to the profit that the employee will make from operating the machine. To put it another way, the employee has no money to buy a tool for himself, nor has he the means to live while making with the tool something to sell. He borrows the tool and he also borrows his subsistence while operating it, and he has to pay interest on the loan. This interest the owner of the mill who makes the loan receives when he takes what the employee has produced and sells it in the market at some advance in price. If he could not do this he would have no incentive to lend the employee the tool and to advance him the subsistence while operating it.

Labor agitators frequently assert that the employers have the upper hand of the employees. This is true in a way, for the employers represent capital and capital is only another name for surplus wealth, and obviously a person who has a surplus of wealth is in a stronger position than a person who suffers from a deficiency of wealth. That is the only way that



PLATE 1

FIRST U. S. TOPOGRAPHICAL OFFICE AT BOUCQ, NEAR TOUL.

capital has the upper hand of labor. As a matter of fact, labor does not lack an "upper hand." By ceasing to work it can at any time put capital in a predicament. Often it is able to land capital in the ditch; forces to this end seem to be pretty actively at work at the present moment.

But even if employees' "production cost" is actually represented in the business as capital, it cannot honestly be claimed that it is denied its rights. If it is capital at all, it may be called preferred stock. Mechanics' liens have always been recognized as a preferred claim; they have to be paid before anything else. On second thought, however, we should say that the employee is not a stockholder at all. His claim is more in the nature of a short time note, depending upon the frequency of pay day. For example, the employer might pay him at the end of every day, but instead of doing so he pays him, say, at the end of the week; consequently, on the eve of pay day the employee may be said to have loaned the employer a sum equivalent to six days' pay. That is, the employer has had the use of the money, and some will doubtless say that he has had it without interest, though we suspect that under normal conditions the weekly wage is made enough larger to include the interest. Thus, as a matter of fact, while the employer begins by lending the employee his subsistence during the latter's period of production, he also borrows production cost capital of him over the brief periods between pay days.

If labor's production cost is part of the capital used in business it is certainly a very singular part. In contemplating it we are reminded of the terms which a white hunter made with an Indian when matching for a turkey — "Heads I win," said the former, "and tails you lose." And the Indian stood for it. The capital representing labor's production cost is, it must be distinctly understood, not in the business with the intent of sharing any loss. We doubt if organized labor would have any use for the theory of production cost capital. Organized labor has been fairly consistent in one thing; it refuses to commit itself to profit sharing, because of the implication which profit sharing creates of loss sharing. If organized labor is not losing any sleep over the injury done to capital representing production cost, why should the correspondent of the National City Bank?

MAP MAKING AT THE FRONT

BY MINTON M. WARREN*

In open warfare on a small scale, accurate maps are not absolutely essential, as the commanding officer can often make an estimate of the situation from personal observation and knowledge of the terrain, and learn enough for his purposes from guides and natives. Even in modern open warfare such as occurred after the Hindenburg line was broken, general maps were often sufficient for most purposes.

In trench warfare, however, where lines stay in position for months and years, an entirely different situation exists. The defenses of the enemy and of your own side become so numerous and complicated that it is impossible for an infantry officer to keep them in his mind, and without exact maps he could not lay out his plan of defence in case of attack, nor could he plan attacks or raids on the enemy.

This is even more true of artillery — and many of the methods taught in this country, even up to Armistice Day, were utterly worthless when the men got to the Western front, where much of the firing was done entirely from maps and co-ordinates. Ranging shots were often impossible, as targets were often invisible from our lines, and aeroplane observers were not always available. Camouflage and other forms of concealment added to the difficulties.

For these reasons it can be seen how enormously important exact maps of the front line were, and how necessary it was to have exact location of all trenches, barbed wire, batteries, machine guns, dugouts, etc.

Although the subject is complicated and technical, and lacks the glamour often associated with front line work, the writer will try to give an idea of military map making in trench warfare, and outline its development in the U. S. Army.

The French had good base maps available before the war, many of them made in the Cadastral survey of Napoleon; and as villages, roads and forests in France change very little in a hundred years, these maps made an excellent base to go on. For military work they were printed on excellent paper, more commonly on a scale of $\frac{1}{20,000}$, about 3 inches to the mile, with

*Captain 101st Engineers, 26th Division, A.E.F.



PLATE 2
AERIAL PHOTOGRAPH TAKEN AT ALTITUDE OF 9000 FEET

5-meter contours. Maps on a scale of $\frac{1}{10,000}$ were also available for front line work, and for special raids, etc., $\frac{1}{5000}$ was sometimes used. Kilometers were squared off with vertical and horizontal lines numbered so that any point could be exactly located by a number representing its X and Y co-ordinates; and by ciphers frequently changed, points could be communicated to the artillery, etc., without fear of the enemies understanding the message.

These maps, however, had to be changed constantly and re-edited as new trenches, barbed wire, military narrow gauge railroads, etc., were built by our own side and by the enemy.

The division topographical office described below was responsible for all territory back to and including the second line trenches on both sides of No Man's Land, this strip averaging about two miles in width and from a mile to five miles in length, according to the width of the division's front. The Army Corps handled territory behind this and the Army took care of the rear areas. It was getting the new information and putting it on maps that constituted the greater part of military topographical work.

When the first units of the American Army reached France, it was found that there was one branch of front line work of which the officers had never even heard. This was a development of trench warfare and was called the "Topographical Section" of the division.

As the name suggested topographical map making, G.H.Q.* had a number of U. S. Geological Survey men commissioned as officers and sent over to run the work, and when the First Division took over a brigade sector on the Toul front, in the early spring of 1918, one of these experts in topographical surveying was placed in charge.

As there was no topographical surveying to be done, however, the previous experience along these lines was of little value, and the work was so entirely different from any of the methods of open warfare taught at West Point, and included in our Field Service Regulations, that an entirely new start had to be made.

General Edwards, however, had sized up the situation in the fall of 1917, when the 26th Division was training behind the lines, and he decided to study the French system, which was

*General Headquarters.

acknowledged as the best and most highly developed of the Allies.

When the division was on the Chemin-des-Dames front in February, 1918, for instruction with the French, the writer, then a lieutenant, was one morning with his platoon in the Piñon Forest, near the first line, quietly engaged in building a dugout and machine gun emplacement, when a runner suddenly appeared and ordered him to appear before the Commanding General at once. A side car was waiting behind a rise of ground, out of sight of the enemy, and in a short time, before the trench mud had dried on his boots, he arrived at the beautiful old chateau occupied by Division Headquarters. There he received orders temporarily detaching him from his regiment (the 101st Engineers) and placing him on the General's staff as Topographical Officer of the division, with orders to make a complete study and report on the topographical sections of three different French divisions then holding that front, with a view to organizing and starting our own Topographical Section as soon as we were given a front. These three divisions happened to be three of the crack divisions of the French Army, with exceptionally fine officers and personnel.

Five of our men were selected and put to work immediately. One man was placed in each of the three French Divisional Topographical offices, and one was put in the office of the Army Corps under which these divisions were operating. In spite of difficulties with the language, these men soon got intimately acquainted with the office routine and field work and general workings of the French system. The writer moved from one office to the other, and went over the different fronts with the French Topographical Officers, becoming familiar in this way with the routine of all three divisions, with a view to combining their good points in forming the American section. The French were most courteous and helpful in every way, and the experience was as pleasant and interesting as it was useful. All our men came away with nothing but admiration for the courage and all round efficiency and character of their instructors, in spite of the general American prejudice which they all felt at first against all things foreign, and especially French.

The 26th Division moved to the Toul front the latter part of March, the 51st Brigade relieving a brigade of the 1st Division on the right, while the 52nd took over the sector held by the 10th Colonial French Division on the left.

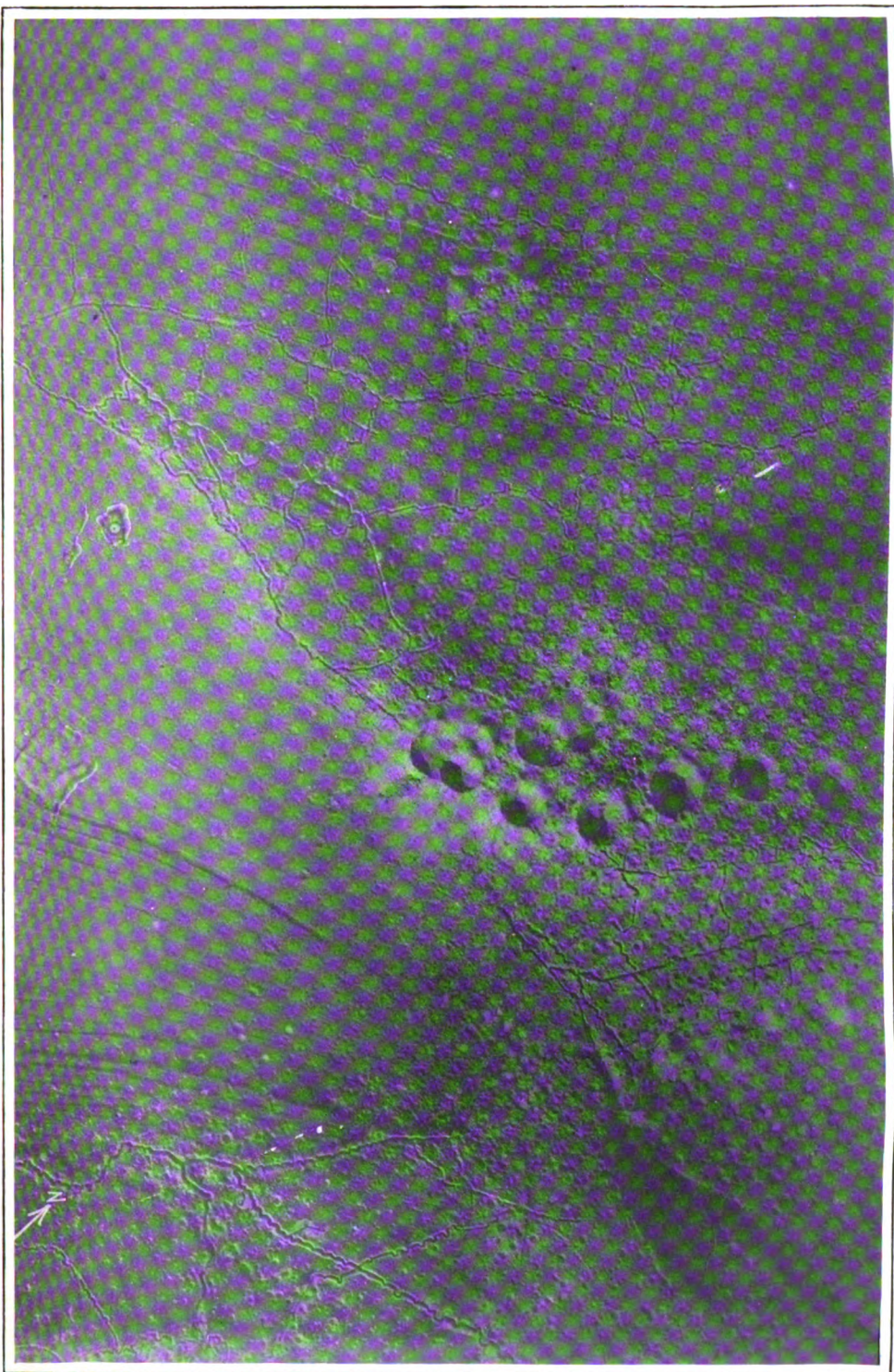


PLATE 3
AERIAL PHOTOGRAPH OF MINE CRATERS ON "LES EPARGES," NORTH OF ST. MIHIEL

As the writer with one other officer was sent several days ahead of the division, to arrange details of the relief and arrange for billeting the men of the division, he was able to secure good quarters for his office in a small shack shown on Plate No. 1. An old stove was secured, and after the cracks in the pipe were plastered up with mud, it served for warmth and for cooking the gum arabic which was used for pasting maps together. An old table top set on wooden horses served as a drafting desk in the daytime and as a bed for three of the men at night, and electric lights were hastily installed, so that the office was ready for business when the division moved in. As will be noted in the photograph, gas masks had to be carried at all times and were a great nuisance while drafting.

One of the greatest difficulties encountered at this time was lack of equipment of all sorts. The men who sent over the supplies for the section naturally had no idea what we wanted, and we used to receive huge packing boxes of fine expensive white paper which was never used, but pencils, water colors, paints, drafting tables, etc., were very hard to get. The men, however, showed great ingenuity in making equipment out of materials at hand, and developed great skill in obtaining necessary things by mysterious methods which would hardly have been considered honest outside the Army. Stoves, chairs, panes of glass, etc., which would be vainly requisitioned for through channels, would mysteriously appear through the window during the night.

The writer was confronted with rather an embarrassing situation when he went to take over the sector maps, etc., from the 1st Division. On introducing himself as Topographical Officer of the 26th Division, the officer in charge smiled skeptically, and said that the T. O.* of the 26th had arrived from General Pershing's headquarters the day before, with five men to start the work for our division. This news was not surprising but somewhat annoying, especially as it turned out that the new officer and his men had never been at the front before, had never had any military training, and had never been inside an army topographical office, although expert in the U. S. G. S.

It seemed rather unfortunate for a division on its first front to be entirely dependent for its maps on men who had no working knowledge of the subject, but there was nothing to be

*Topographical Officer.

done except to co-operate. However, when a colonel of General Pershing's staff, who was Chief of Topography of the A. E. F., came to our front and found that General Edwards had a topographical section already trained by crack French divisions, he put the new officer and men to work learning our methods, and afterwards sent them to new divisions coming over from the States, to help set up their offices on the same lines. He also incorporated our system of maps and folders in the official G. H. Q. instructions for the American Army. Plate No. 1 shows the new officer and his men at work in our office.

The work of the division topographical office may be summarized under six headings:

1. Placing on maps the collection and co-ordination of all reports and information concerning their own and the enemies' front line organization for the use of the Division Staff and other officers. Keeping these maps up to date at all times.

2. Supplying the necessary information to the Army Corps for getting out new editions of the base maps.

3. Distributing new editions of base maps, sketches, aerial photos, etc., to lower units, and making certain by inspection trips that these units had on hand a proper number of the latest maps at all times.

4. Supplying infantry observation posts with instruments and supplies, and inspection of these posts to aid proper up-keep and use of instruments and equipment.

5. Making special sketches from field surveys, etc., for the use of staff officers or regiments, in preparing for raids, etc.

6. Directing and supervising the topographical work and reconnaissance of regimental intelligence officers, and supplying them with topographical equipment.

Four special folders were kept containing maps as follows:

G-1 Folder, of Our Own Lines

1. General map showing munition dumps, engineer dumps, kitchens, P. C.'s, first aid posts, amb. sections, railroads, roads, etc.
2. Water supply, wells, tanks, etc.
3. Food and munition depots and engineer dumps.
4. Roads.
5. Railroads.
6. Camps, cantonments and billets of area. (No. of men, horses, officers, etc., in each.)
7. Evacuation of wounded, dressing stations, etc.

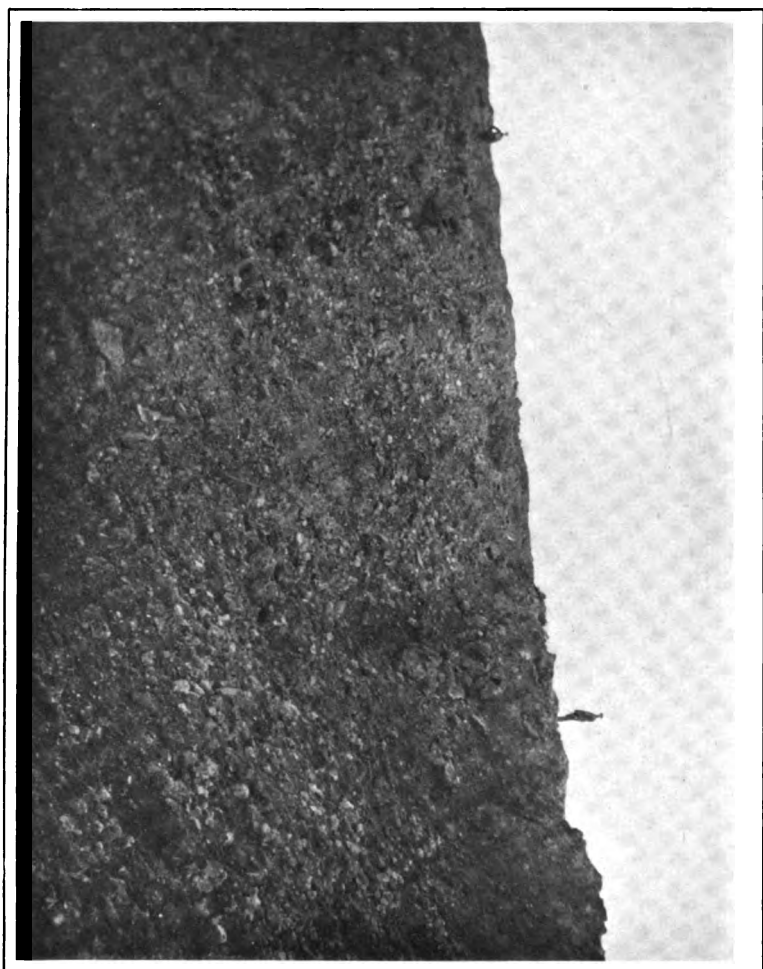


PLATE 4
VIEW FROM BOTTOM OF LARGEST MINE CRATER

G-2 Folder, Intelligence of Enemy

1. Enemies' works, trenches, dugouts, etc.
2. German order of battle, especially on divisional front.
3. German batteries, howitzers, trench mortars, M. G.'s and their activity on the divisional front.
4. Areas shelled by enemy's artillery.
5. Areas shelled by gas.
6. Enemy's roads and railroads.
7. Enemy's aero stations and balloons.
8. Targets for our artillery.
9. Enemy's wireless.

G-2 Folder, Liaison of Our Own Forces

1. Observation stations, sound and flash ranging stations.
2. Visibility from observation stations and panoramas.
3. Telephone lines.
4. Wireless telegraph.
5. Lights and signals, optical liaison.
6. Runners, horsemen.
7. Pigeons.

G-3 Folder, Our Own Lines

1. 1st, intermediate, and 2nd positions.
2. Defense plan, combat groups, centers of resistance, P. C.'s (down to Co.'s, sector limits, sub-centers, distribution of troops to $\frac{1}{2}$ platoons).
3. Plan Navette, showing trenches, wire, dugouts, etc. (kept in Topographical Office).
4. Defence plan, combat groups in case of attack (Div. alert).
5. Machine gun positions, targets and barrage.
6. Artillery positions and barrage.
7. Anti-aircraft guns.
8. Anti-tank guns and defense.
9. Trench mortars, etc.
10. Liaison, trenches, etc., of neighboring divisions.
11. Billets of area.

The sources of information used in keeping these maps up-to-date were as follows:

- A. Reports.
- B. Field work.
- C. Aerial Photos.
- D. Shuttle Maps.

A. Daily reports from

1. Infantry regiments.
2. Artillery Brigade.
3. Neighboring divisions.
4. Artillery observers.
5. Aero observers and balloons.
6. Army corps.
7. Army.
8. Intelligence and Operations reports of our own division.

A typical intelligence report of the Y. D. follows which shows a quiet day of trench warfare, broken at two in the morning by a fierce raid on our lines.

CONFIDENTIAL
Not to be taken
into front line
trenches.

26th Division, A.E.F.
Second Section, G.S.
No. 55.

SUMMARY OF INTELLIGENCE

May 26th to May 27th, 1918

Noon to Noon

I. ORDER OF BATTLE.

Confirmed by capture at PLANTATION HUMBERT of a prisoner belonging to the 5th Company, 104th Regiment, 40th Division.

II. ACTIVITY OF THE ENEMY.

(a) Infantry: At 2:00 o'clock the enemy made a raid accompanied by violent artillery fire on our right sub-sector. A box barrage was put down from west end of PLANTATION HUMBERT to 200 yards north-east of Bois ETROIT, to ST. DIZIER-METZ road westward along road, and back to west end of PLANTATION HUMBERT. Under cover of this, an attacking force composed, according to a wounded prisoner, of 400 men blew up our wire in two places with long charges, attacked our line on the flanks and attempted to sweep into eastern junction of Tr.* BAUER and Tr. FERNIER, making great use of light machine guns. They were repulsed by our infantry and artillery fire, leaving an officer and four men dead in our trenches and one wounded prisoner in our hands. About 15 or 20 dead were observed near our wire and 10 stretchers were seen being carried away from this point. The enemy retreated toward Ravine GOULOTTE.

Considerable machine gun fire on Boy. JURY-REMIERES. One of our patrols was fired on from Bois des ELFES. Shots from sniper in vicinity of 52.84-32.0.

(b) Artillery:

	77	105	Misc.
BEAUMONT-FLIREY road			150/gas & H. E.
RAMBUCOURT			130/77's & 105's,
			30/gas
XIVRAY		30	
LA FAUX BOIS NAUGINSARD	20		

Total shells reported in sector: 360

NOTE: Very heavy barrage on right sector from 2:00 to 3:30, as stated above. At 5:00 o'clock sudden heavy shelling near P.C. BAYARD.

III. AERONAUTICS.

(a) Balloons: During the morning balloons of GRANGE-EN-HAYE, LAGINAU, XAMMES, Bois d'HARVILLE, BILLY-sous-les-COTES, BENEY and JAULNY in ascension.

*Trench.

(b) Airplanes: At 18.30 four planes over XIVRAY to east; 4.38 three planes over Bois du JURY to west; 7.58, three planes over MONTSEC toward southeast. At 10:02, an American plane of the 94th pursuit squadron came down near RAMBUCOURT, the pilot slightly wounded.

IV. MOVEMENTS.

- (a) Trains: Nothing to report.
- (b) Decauvilles: 9:40 VIGNEULLES to HEUDICOURT. 10:35, Bois de DOMMARTIN to CHAMBLEY.
- (c) Motor Trucks & Wagons; Usual traffic in HATTONCHATEL.
- (d) Usual traffic in LAVAUD Trench; work being done there. Some individuals in FOX salient. One man observing with field glasses and later another driving stakes at 63.4-34.4. Individuals in Tr. de l'ARTILLERIE, ST. BAUS-SANT, Bois de la SONNARD. One man with cane from QUART DE RESERVE to Tr. des BARBARES. Man working near supposed machine gun emplacement at 53.6-33.15; and there was considerable circulation of individuals around this point.

V. WORK.

Work throughout day in vicinity of 61.04-33.45. Work going on in trenches at 55.6-33.3, 53.6-33.7 and 54.2-33.88. Hammering in Bois de la SONNARD. Sounds of work near ST. BAUSSANT. New work in trench at 53.25-33.44 and at 52.76-33.28. At this latter point there is a camouflaged opening of about 15 yards in woods. Workmen heard in rear of RICHECOURT during night.

VI. MISCELLANEOUS.

Visibility poor to fair.

Several balloons carrying propaganda fallen in our lines.

Smoke in Bois de BURLY.

Sounds of singing and laughter in Bois de la SONNARD.

At 2:30 four red rockets of two stars each in Bois de la SONNARD.

Music and singing in ST. BAUSSANT.

VII. GENERAL IMPRESSION OF THE DAY.

Calm during afternoon and early evening; strong raid with large accompanying artillery activity over the whole right half of sector in morning.

VIII. ESTIMATE OF ENEMY'S INTENTIONS.

The simultaneous raiding of this portion of the front would point to a resumption of the enemy's offensive with its accompanying diversion activity in this vicinity.

IX. ACTIVITY OF OUR OWN TROOPS.

Less active patrolling because of extension of line.

Besides these daily reports, the following were received from time to time:

1. Information from prisoners examined by the division.
2. Information from prisoners examined by the Army Corps.
3. Information from prisoners examined by the Army.
4. Special Army reports from spies, etc.
5. Reports of officers inspecting the sector, giving condition of trenches, wire, etc.

B. Information was also gathered in the field, and the T. O. was in the front line trenches at least two days a week.

C. Aerial photographs.

Of the first line from the Army Corps.

Of the rear from the Army.

These photographs were perhaps the most important source of information for making accurate maps.

Plate No. 2 shows a typical aerial photo taken from an altitude of about 9,000 feet. The ground was mostly ploughed fields with a stream running through the center and a wood in the corner. A railroad runs diagonally across, with double rows of barbed wire entanglements showing like dark shadows on either side. A number of dumps and gun emplacements show white where the new earth has been turned up and the ground worn by the tramping of men.

Plate No. 3 shows the mine craters of "Les Eparges," where the Germans blew up the French front line trenches by exploding huge charges of explosive placed by digging long galleries underground.

Our front line trenches appear to the left, the German trenches to the right, with No Man's Land between. The dots are shell holes, while the large circles are mine craters. It was from this ridge that the French attacked in 1916 and lost some 30,000 men on the ground shown on the picture. It was also from these front line trenches that the Y. D. hopped off at dawn on September 12, 1918, and cut off the St. Mihiel salient from the north.

Plate No. 4 shows two men on the edge of one of these craters holding a 100-foot tape. This crater was 200 feet across and 40 feet deep, and was the largest of all, the fourth from the top in Plate No. 3.

Plate No. 5 shows the writer at one of the entrances to this mine, which was probably the largest military mine ever built. The galleries extended several kilometers under the hill and under our front line. This entrance and several others, with the wasted earth, can be seen in the aerial photograph (Plate No. 3) to the right of the craters behind the German front line. These mines were captured by the 26th Division in the St. Mihiel attack. The writer, who had then returned to his regiment, was given the job of unloading the tons of explosive in them. Much to his relief, however, the division moved to Verdun before the work was really started.

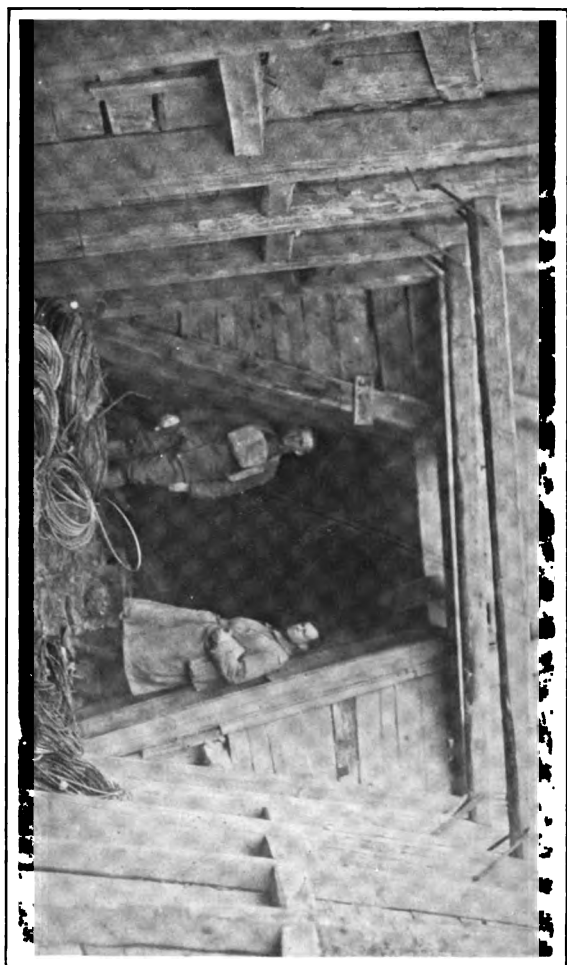


PLATE 5
ENTRANCE TO GERMAN MINE CAPTURED BY 26TH DIVISION

The "Plan Navette," or "shuttle map" of the division, which keeps moving back and forth between the division and the Army Corps, was, perhaps, the most important and secret map of the entire army. This map covers all our trenches, wire, dugouts, headquarters, etc., and was constantly being worked on as new data came in. Once a week or so it went to the Army Corps for a day, covered with a piece of tracing paper on which was shown all new work, or changes which had occurred since its last trip. From this the new editions of secret base maps were made by the Army.

Smaller "shuttle maps," covering the regimental and battalion sectors, were kept by the regiments and battalions, and served the double purpose of being the most up-to-date plan of defence for use of the commanding officer and the best method of sending changes to higher units.

The distribution of maps was a considerable task, and in active times over 2,000 were sent out monthly. Records of all maps issued were kept, and secret maps had to be signed for. Inspection often brought out the fact that lower units had not received the latest editions, and secret maps were often found in company headquarters in the front line, where they were not allowed, owing to the danger of being captured by the enemy.

The equipment of the office was of the simplest, as it had to be moved quickly and easily. Three reproducing processes were used for getting out large numbers of maps, — the jelly-roll, the neo-cyclostyle, and the clay hectograph. Water color paint was used often, and reducing compasses and magnifying glasses or stereoscopes were used in working on aerial photographs.

In preparing for an attack, the Topographical Section was taxed to the utmost and often had to work twenty-four hours a day. When the 26th Division relieved the French on the left side of the St. Mihiel salient on September 5th, preparatory to the great attack on the 12th which cut off the salient, it was found that the data available as to enemies' defenses, — barbed wire, machine gun positions, etc., — were very meager. As the whole success of an attack may depend on knowing where the enemies' defenses are, — the wire and battery positions, etc., — an enormous amount of work had to be done by the intelligence section before the T. O. could get data for making up the battle map. The proper location of a machine gun

nest may mean the saving of a hundred lives in an attack, so we did not want to send the maps out until all possible sources of information had been exhausted.

Our office was set up in the corner house shown on Plate No. 6, the Intelligence section being downstairs and our office upstairs, the one window being the only light for our draughting room. The personnel, including our mascot, a police dog captured from the Germans, appear in front of the building.

This building still had a roof and was never struck by a shell, although the house next door was less fortunate. In addition to the lack of information, we were confronted with the necessity of getting out in a few hours enough maps to supply every platoon commander and higher officer. This meant several hundred copies, and it was seen that our clay hectograph and other copying processes could never supply the demand. For this reason, we borrowed the lithograph outfit belonging to the 101st Engineers, which we carried on a mule team and set it up in a neighboring house, which had the floor and roof undamaged. Thirty-six hours before the attack, the information was finally complete, and the zinc plate made, and it was then necessary to work continuously through the night to get the maps out on time. As the process is rather a delicate one, and only candles were available, it made night work very difficult, but the men worked steadily till 500 maps were ready and distributed before the zero hour arrived. These maps showed our objectives, and the time at which we hoped to arrive at each, the lines which each regiment were to follow, and the location of enemies, wire, dugouts, machine guns, batteries, barracks, etc., which we had located from aerial photographs, observation posts, prisoners, and all other means. The base map on which this was printed showed contours, roads, rivers, etc.

Besides these maps, we were hard at work on maps of the different villages we planned to capture. These were on a scale of about 12 inches to the mile, or larger, and showed houses, trees, fences and everything that could be discovered from aerial photographs, old maps, etc. These were reproduced in different colored inks on the clay hectograph, and given to the company and battalion commanders within whose line of advance the towns lay.

One of the schemes developed for foretelling the Germans' intentions was a system of curves suggested by the curves which we use in the Stone & Webster Engineering Department for



PLATE 6

**OFFICE OF INTELLIGENCE AND TOPOGRAPHICAL SECTIONS OF Y. D.
DURING ST. MIHIEL ATTACK**

foretelling stream flow. These curves, shown on Plate No. 7, proved to be a valuable barometer for indicating raids or major attacks, etc.

The Germans are so methodical that their attacks or raids were usually preceded by the same symptoms each time. As an indication of their methods, we often noticed that certain towns would be shelled at certain hours every day. Also the shells would often come at regular intervals, one on the hour, one at 5 minutes past, etc. Everything was done by exact rule. By plotting the total number of shells reported which they sent over to our sector, and also the number of aeroplanes, wagons, trucks and men seen by our observers, etc., each day, we had a good chance of being warned of anything unusual going on in their lines. The visibility, of course, affected all of these things and the curves were of little value in times of bad visibility, during fogs or heavy rains.

Plate No. 7 shows the period just before the 26th Division relieved the Marines and 2nd Division near Chateau Thierry, and goes up to the time when the 26th Division relieved them and attacked, driving the Germans back, after which time we were so busy moving forward that we had no time to set up an office or draw curves. These curves cover a period of more or less open warfare, and do not illustrate their own value as well as would similar curves for trench warfare, such as we had on the Toul front. Certain things can be noted, however. The large movement of wagons and trucks before the battle on July 12th, and the unusual numbers of men seen July 12-15th, showed that the Germans were massing. The Marines, however, in the famous Belleau Wood fight changed the tactics of the Germans on that front, and circulation diminished, but more aeroplanes were sent over as the Germans were getting worried and wanted to discover our intentions and to drop bombs on our transport trains, etc. The periodic peaks in the curve for men show the usual reliefs of front line companies and battalions by those in reserve or support. All of these things helped the General and other staff officers in making their estimate of the situation, and any unusual number of wagons or men showed up much more clearly on a curve than they would on the printed page of the daily intelligence report, where there was no means of comparing it with previous days without going to the files.

Topographical section and map making sounds rather

prosaic and uninteresting, but at the front this work covered a wide field; collecting daily information from all possible sources in earth and sky and transferring it to paper, where at a glance it became the property of the minds directing every move of the great war.

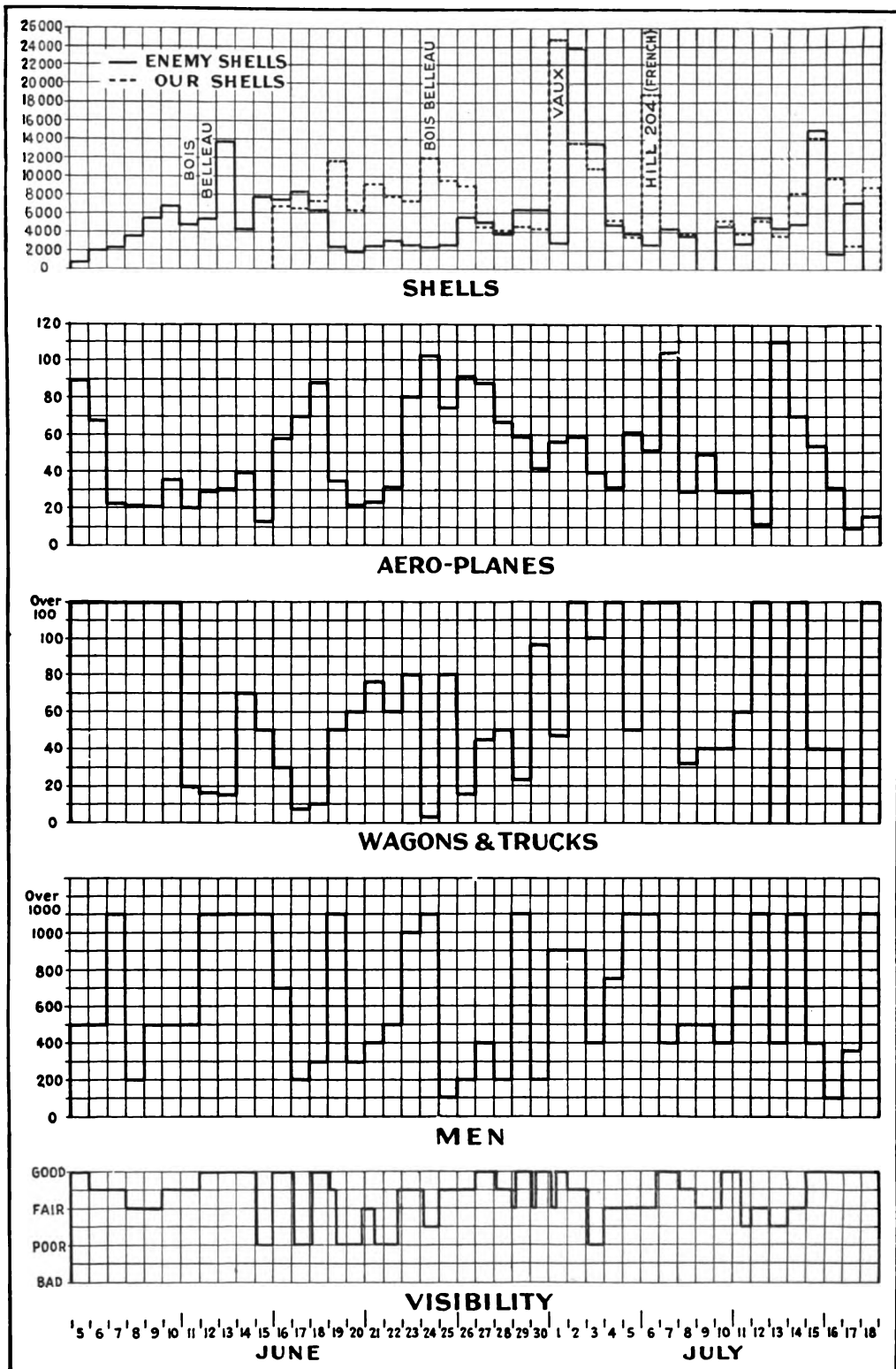


PLATE 7

CURVES SHOWING SHELL FIRE AND ENEMIES' MOVEMENTS ON DIVISIONAL FRONT DURING CLOSING DAYS OF LAST GREAT GERMAN OFFENSIVE, JULY, 1918, UP TO THE START OF THE ALLIES' COUNTER OFFENSIVE THAT ENDED THE WAR

THE DISTRIBUTION OF WEALTH*

BY GEORGE E. ROBERTS

I am honored by the invitation to address the Society of Industrial Engineers. There is nothing of which the world is so much in need today as that constructive, managerial talent which makes for efficiency. I take from what I know of you that you are making a study of industrial methods in a broad way, trying to co-ordinate all the elements which exist in industry. Efficiency is not simply in having the best equipment, or the best possible shop arrangements, but in that state of harmony throughout the organization and in operations which produces the best results. And that is the great need of the world today.

The world is in a sad state of disorder. Civilized, highly organized society was never in such a state of distress and disorganization as now. There is need for every machine to be kept running, every ship and car moving, and for every person to do his full part to restore normal conditions in industry and normal supplies of the necessities and comforts of common consumption. And in the face of this there exists the greatest confusion ever known in industry.

We have the most highly developed industrial organization in the world, and our capacity for production is greater than ever before, but we have a state of feeling pervading industry which not only lowers production but threatens almost a breakdown of the system. We know that a great many people are actively trying to accomplish this end.

Misunderstanding the Genesis of Ill Feeling

What causes all this ill feeling and confusion? The attitude of the wage earners is not due, we may be sure, to malevolence or depravity or any deliberate purpose to disregard the rights of others. It is all due to misunderstanding. It is due in the main to an agitation against the existing system of society which has been growing for years, and which has its origin in two opposing views which I want to describe as briefly as I can.

There are two general views of life. One set of people look out upon it as a sort of a routine performance, largely

*An address by Mr. George E. Roberts, vice-president of the National City Bank of New York, before the Society of Industrial Engineers at Cleveland.

automatic and mechanical, except changed in some arbitrary manner. They lay all emphasis upon authority of some kind — the authority of the Government or the power of some organization, the power of numbers or of class, or of strategic position, or to sum up, the power to compel a reorganization of society by mere readjustment or a new distribution of existing property. These people think of the existing order as a state of things that has been arbitrarily planned and created and which can be changed only in the same manner and by superior force. This is the set of people who are filling the world with noise, confusion, disorder and misery tonight.

On the other hand there are the people represented by your society — whether they are members of it or not — who look upon the existing order not as a state of things fixed or permanent or final, or according to plan, but as a developing order, with endless possibilities for gradual change and improvement. Your profession as engineers pledges you to the task of improving industrial methods, and every improvement in the methods of industry brings improvement in the living conditions of the people. Your profession makes you open-minded and receptive to new ideas, but it teaches you also that improvement always comes by connected steps, one leading to another, and that it is poor policy to discard the house that shelters you until you have another ready to serve you better.

Two Views of Existing Wealth

The first group lays all emphasis upon a division of the existing stock of wealth; the second lays the emphasis upon increasing the supply of wealth, satisfied that if the supply is made constantly larger distribution will take care of itself. The latter know that social conditions can never be improved by dividing up the amount of wealth in existence at any one time. The existing stock of consumable wealth never amounts to much; it is the steady stream of newly-made consumable goods into the market that supplies the wants of the people, and the problem is to enlarge that stream by making industry more productive.

The first group looks upon the surface of industry, and takes account of nothing but what is in sight. It thinks of production as a fixed and regular amount without allowing that it may be increased or decreased, and of all individuals as contributing equally to production.

It sees nothing in operating a railroad but to move a certain number of trains each way over the road every day, and therefore it sees no reason why the government should not operate the railroads. The other group takes account of the inherent incapacity of the government in industry, and does not look to political methods or machinery for efficiency or leadership.

The fundamental cause of most of the misunderstanding which exists is that the modern industrial system has developed beyond the view and comprehension of the average man. He doesn't follow all its complications, he is not familiar with the economic laws and doesn't know whether he is getting a fair division or not, but suspects not.

Lack of General Economic Knowledge

It is no reflection upon his intelligence to say this. Thousands of people go through our schools and universities and come out without any clear ideas on the subject, and some of them remain in the universities as teachers. Not one person in twenty who essays to discuss wealth and incomes says anything about the fundamental principles which lie at the basis of industrial progress.

The workingman reads and is told of vast accumulations of wealth in the hands of a few. It is said that two or three per cent of the people own most of the wealth, and as a matter of fact it is true that only about three per cent of the population paid any income tax last year, although that doesn't sound so bad when you reflect that only about twenty per cent of the population are heads of families and the heads of families usually hold the property. But the working man hears of personal incomes that are far beyond the needs of any man or family, and he thinks of these as meaning deprivation to the wage-earning class. He thinks of them in comparison with his own income or the average income. The comparison is almost wholly misleading, and I would like to point out the manner in which it is misleading. I want to lay down the proposition that the real distribution of wealth is not by ownership or income but by consumption. It is only as an individual consumes wealth or uses it exclusively that he deprives other people of it or reduces the common supply.

We talk about capital and income in terms of money, but money is only the medium of transfer. Wealth actually exists in the form of tangible property, and in discussing distribution it is better to think of it as people use it.

"Consumable" and "Productive" Wealth

Wealth is of two general classes. There is what is known as "consumable goods" consisting of things that are consumed or used directly, such as food, clothing, dwellings, furnishings and such like. The other class of wealth consists of property used in the production of consumable wealth, such as land and factories, or property which renders public services, such as railroads and other utilities. Wealth of this second class is not to be valued by itself. It exists, not for itself, but to produce a flow of goods and benefits, and all the value comes out in the flow. The value of a farm, aside from the fact that the farmer lives on it, is for the crops it will yield; the value of a factory is for the goods it will turn out; and the real distribution of benefits from all productive properties is in the distribution of the goods they produce or the services they render. And right here is where nine-tenths of the misunderstanding over the distribution of wealth arises. I repeat that the right place to measure the distribution is not at the point of ownership, or production, but at the point of consumption. The great consuming public is the chief beneficiary from increasing production.

Measuring Wealth at Point of Consumption

And when you come to measure distribution in this manner you get a result very different from the representations commonly made. Two or three per cent of the population does not consume most of the food supply, or wear most of the clothing, or burn most of the coal, or occupy most of the house-room, or do most of the riding on the railroads, or even own most of the automobiles. The vast commerce of this country and traffic upon the railroads is not in supplying the wants of two or three per cent of the population. It is no small section of the population that is behind the great trade going on all over this country today, the character of that trade gives every evidence of a widespread distribution of products.

In short, the whole theory that a comparatively few people enjoy most of the benefits of existing wealth breaks down completely under examination. The fact is that in proportion to the total social product the share consumed by the rich is insignificant. The large incomes in the main go back into industry to increase production for the public market, and the benefits inure chiefly to the public.

Fallacy of Radical Argument

The whole radical argument is based upon the idea that all the wealth employed in industry benefits nobody but the owners. It proceeds upon the theory that all the increasing supply of goods and services resulting from the investment of private capital is absorbed and consumed by the capitalists. The idea is pure theory, unrelated to the facts. It is like claiming that nobody ever got any benefits from the development of the steam engine but the owners of engines, that nobody has been benefited by the construction of railroads but the owners of railroad shares; that nobody has been interested in the development of the textile industry but the manufacturers, and so on around the circle of industries. The position only needs to be stated to make the fallacy apparent.

Industry's Debt to Capital

You are a society of engineers. You are familiar with the progress of industry, and you know the means by which production has been increased to meet the needs of a growing population and raise the standard of living for the masses. It has been done by improving the methods of production and by the use of power and machinery. It has been done by the development of the industrial plant, and that plant represents the profits and savings of individuals. Those savings and investments have lifted the whole level of social life far above what it was before capital became an important factor in industry. If you want to see a state of society where capital is no such factor in industry, go to India or China. If you want an abundant distribution of the comforts of life you must first have efficient and abundant production of them. It is clear that you cannot place distribution ahead of production, and I think it can be made equally clear that as production increases distribution increases and broadens to serve the common welfare.

The history of industrial development shows that capital has been a constantly increasing factor in production. Our census reports show that in 1899 the amount of capital employed in manufacturing establishments in the United States averaged \$1,770 for each person employed, that five years later in 1904 it was \$2,117, in another five years, in 1909, it was \$2,488, and in 1914 it had risen to \$2,848. This increasing investment has meant that more and better equipment

was being provided, that better tools were being placed in the hands of labor and that the production of consumable goods for the public market was being increased. In the ten years from 1899 to 1909 while the population of this country increased 21 per cent, the amount of capital invested in manufacturing increased 105 per cent, and the amount of steam or hydro-electric power employed in manufacturing increased 85 per cent.

Productive Property Part of Society's Equipment

I want to enforce the point that all this productive property, although privately owned, is part of the equipment of society; that it promotes the common welfare and is necessary to the common welfare. It is doing the same work that it would do if it was owned by the State, and as we believe, doing it more effectively than if the Government owned it. When people advocate the ownership of the railroads and other industries by the government the thought in their minds is that they will thereby avoid paying profits to the owners, but they forget that if there were no surplus earnings, nothing left over after paying expenses, there would be no capital for the improvement and enlargement of these services and no industrial progress. If there had been no profits or savings in the past there would have been no such industrial equipment as we have today, and social conditions would be far worse than they are now.

If we had a socialistic State, all of this property would have to be created, all of these productive agencies would have to exist, and they would have to be provided by reserving capital from distribution just the same as now. And so I repeat, that so much of a man's income as is invested productively is not to be counted as though it was devoted to himself exclusively. A man's share in the real distribution is what he consumes and no more; the remainder of his income, if put back into production, as practically all savings are, is in the service of the public, just as much as though he turned it over to the Government. What better could the Government do with it?

Example of Armour & Co.

Mr. Ogden Armour stated before a Committee of the Senate recently that 87.90 per cent of all the profits of the Armour business since it was organized had been retained in the business for its development. That is to say, about seven-eighths

of the profits have been reserved to enlarge the business and one-eighth has been withdrawn by the owner for other purposes and some of that was probably invested for other productive purposes. If the packing business had been conducted by the Government this investment in plant and working capital would have been required just the same, and it would have had to be provided either out of the earnings of the business or by taxation, and if a socialistic state was conducting all lines of business and owning all property, of course there would be no taxation for there would be nothing to tax. There is no way of escaping the fact that the growth and development of industry requires that new capital shall be constantly reserved and accumulated, somehow and by somebody, and nobody is able to show how that can be accomplished more economically and rapidly than under a system which offers an incentive to every person to produce and accumulate.

Mr. Carnegie's Disposition of His Income

Andrew Carnegie made one of the greatest fortunes ever achieved in industry. He was a great executive and manager of business. He had the receptive attitude toward new ideas. He was always looking for greater efficiency, and for means to reduce the cost of iron and steel. The money he made in the steel business he put back into the steel business for its development. I used to live out in the corn country and I remember that it used to be said that a farmer was always wanting more land to raise more corn, to grow more hogs, to buy more land, and so on ad infinitum.

And so Andrew Carnegie was always wanting to lower his costs, to increase his product, to get more money to enlarge his works and lower his costs, to increase his product, etc. The great fortune of which people read, and which many have criticised, existed in the form of the most efficient equipment in the world for making iron and steel. His efforts served to reduce the cost of all kinds of tools, implements and machinery used in producing the necessities and comforts of life, the cost of railways and ships used in transporting them, of buildings, and docks and tunnels and all the equipment of industry and transportation. He made his fortune not by increasing the cost of steel to the public but by cheapening it, and all of his income, but the insignificant share of it that he consumed in living expenses, was devoted to enlarging and improving the works

which were really public facilities, or, finally, in gifts to other public purposes.

I remember that when I was a boy in school there was a picture in one of my school books of the Victoria Bridge over the St. Lawrence River at Montreal, then considered one of the engineering wonders of the world. That bridge was torn down just about the time that Mr. Carnegie retired from business and a new bridge was built on the abutments, which were somewhat extended. The old bridge was 16 feet wide and carried a single railway track. The new bridge was 64 feet wide and carried two railroad tracks, two street car tracks and a wagon way. The old superstructure cost \$3,000,000 and the new superstructure cost \$1,500,000, and the period between the two bridges almost exactly covered the time of Andrew Carnegie's career in the iron and steel business.

What If His Accumulations Had Been Curtailed?

This is the service of capital; it is the result of having capital at the command of a man of enterprise and with the genius of management. Mr. Carnegie never could have accomplished what he did without the use of the profits which he was able to gather by means of the new methods which he introduced. His enterprise would have been checked and his accomplishments would have been comparatively small, if when his capital reached, say, \$100,000 or even \$1,000,000, the Government had stepped in and required that all further accumulations should go into the public Treasury. And yet his additional accumulations all went to the public benefit, even more effectively than if they had been paid into the Treasury.

Suppose that a farmer of exceptional managerial ability steadily devotes the profits of his operations to bringing his lands into a higher state of cultivation, so that the yield per acre is increased from year to year, and then extends his operations over other lands that have been idle in swamp or barrens, thus annually enlarging his production of foodstuffs for sale on the public market, and keeps this up all his life? Does the public welfare suffer by reason of his prosperity? Is there any reason for the public to grudge his growing income so long as he continues to invest the profits in that manner?

And if it is in the public interest that the farmer shall bring his lands to a high state of cultivation in order that the production of foodstuffs be increased, and likewise that the

steel industry be improved so that steel for its varied uses shall be cheapened, and the textile industries shall be developed to higher efficiency in order that the supply of clothing may be increased and cheapened, is it not clearly in the common interest that every worker in whatever capacity he labors, shall give his best efforts honestly and faithfully to the task which he has accepted in the social organization? To whatever extent he fails to do this, he offsets and neutralizes the efforts and discoveries of others by means of which social progress is made.

Society Would Retrograde Without Capital Accumulations

There is another fact to be emphasized in relation to the importance of capital accumulations. It must be remembered that as population increases, the task of providing for its subsistence becomes more difficult, unless the methods are improved. The richest or most accessible lands are occupied first, and after they are taken, population spreads over the poorer lands or those which require more labor for their development. And then the great stores of natural wealth in the soil, timber, and mineral resources of a new country are gradually exhausted, so that the fertility of the soil must be maintained or replaced by methods of cultivation which increase the costs; timber must be grown by cultivation; substitutes for the minerals must be found.

We have occupied the rich prairie lands of this continent and the prices at which they are selling show how much more they are worth than the lands which are yet to be brought under cultivation. Food and clothing materials for our growing population will cost more in the future because it will cost more labor to produce them. All raw materials are costing more as population increases and the natural resources are impaired. There must be constant improvement in the methods of industry to offset this tendency or society will not even hold its own, and such improvements are commonly in the form of labor-saving machinery. In other words, instead of dividing up and eating up all that is produced as we go along, some of the wealth that is produced must be withheld from consumption, and devoted to making industry more productive in the future. Otherwise, the early generations who have occupied this country will have exploited it and left nothing to compensate their children for the harder task of making a livelihood which will confront them.

The Master Principle Which Governs Distribution

The average man, however, while agreeing that production must come before distribution, is disposed to insist that he must know more about distribution before he will have much interest in increasing production. He wants to know what assurances there are that after production has been increased he will get a larger share. The answer to that is given by pointing to the natural law which governs distribution. Follow me for a moment while I state it. In all progressive countries capital increases faster than population, and faster than the labor supply. I have referred to the census figures which show that in this country from 1899 to 1909 the population increased 21 per cent and the amount of capital increased 105 per cent. There is no way in which capital can be put into use except by employing labor. Every dollar of new capital accumulated creates a new demand for labor, and with capital increasing faster than population, labor comes inevitably into a constantly stronger position. And not only do the new supplies of capital create a constantly increasing demand for labor, but the employment of both labor and capital is mainly in providing things for common consumption. The great bulk of the industrial product must be sold and distributed back to the masses of the people.

Capital's Sole Use

Practically all of the great expenditures of construction and equipment which we see going on all about us are for the purpose of serving in some manner the masses of the people — of supplying something that they want and can afford to buy. There is no other employment for capital. It wouldn't take many factories or railways or costly terminals to supply the wants of the rich — there are not enough of them! It is the wants of the millions which keep the wheels of business moving. And with capital increasing faster than population, with this enormous increase in equipment and the improvement in methods and machinery, we are bound to have a constant increase in the production of commodities per head of population, and the only way these commodities can possibly be distributed is by such a continual readjustment of wages and prices as will enable the masses of the people to buy them. There would be congestion in every line of production, and enterprise and industry would choke down, if the purchasing power of the masses did not constantly increase.

Every new fortune, every dollar of new capital goes forth-with to work as a producer, multiplying the things the world wants, and if things increase faster than people, what must the tendency inevitably be?

Benefits of Abundance Reach the Masses

What would you say if you knew that the wheat crop would increase steadily faster than population, from say four bushels per capita to five bushels per capita, and six bushels per capita, and so on indefinitely, and like that all over the world? Do you think that any possible combination could prevent the benefits of that abundance from reaching the consumers? Something like that is occurring in normal times all over the industrial field, and under such conditions you can no more prevent the benefits of abundance from reaching the masses than you can prevent the rivers from reaching the sea.

How long would the rivers flow to the sea if the waters were not taken up by evaporation and again distributed over the land? And the laws that govern the distribution of moisture are not more certain than the laws which determine the distribution of the benefits of industrial progress.

The security and rise of the masses happily does not depend upon the generosity or forbearance or considerate favor of those who rank above them on the social or economic scale; they come up because there are resistless and everlasting forces that work for equality among men. Belief in that is simply belief that there is a moral order in the universe, that there is an integrity at the heart of things to which the universe is true.

Universality of Law

There is evidence on every hand that the universe is governed by law. Behind all of the vicissitudes and convulsions of Nature, back of all the uncertainties and conflicts and hardships of life, there is consistency and purpose and beneficent law.

In the physical universe there is the law of the conservation of energy and of the correlation of forces which describes a complete interdependence among all the forces of Nature. There is action and reaction, compensation and balance everywhere. All the worlds that swing in space are held in their places by counterbalancing forces. And those laws or their counterparts extend throughout the social and industrial world.

There can be no productive effort anywhere, no touching the industrial system anywhere, without effect and reaction throughout the entire industrial system. There can be no monopoly or isolation of benefits, or of injuries. If the distribution of new wealth does not take place where and as we look for it, it takes place elsewhere and by other means.

Agitators Working Overtime

Now these facts are not new; why do they count for so little in the discussions of the day? All the forces of agitation are working overtime upon the ills of society with scarcely a word about the great natural laws that underlie and control the development of society, and by which all the progress of the past has been made. There is such a tempest on the surface that the steady flow of the current is unseen. But what would it be worth to the peace and progress of society if a knowledge of these mutual interests could permeate all classes and enter into their daily thinking?

What would it be worth to have it fixed in the popular consciousness that progress is not by strife but by efficiency, and that great ameliorating influences are always at work.

Nine-tenths of the bitterness and violence that accompany our industrial disputes are due to a feeling of class injustice, to a belief that the organization of society is all wrong, and that the many are constantly exploited by the few — something in the nature of things impossible. No thoughtful man can see the symptoms of widespread unrest and resentment without a feeling of profound sorrow that so much misunderstanding should exist.

Patriotism Means Loyalty to the People

Now it is certain that we have got to live with the people. We can't get away from them if we want to, and we do not want to. We have faith in the people. Our institutions are founded upon that. We know that they are sound at heart, for in the individual relations of life they are generous and kind and right-minded. Even in the very labor struggles which we deplore and believe to be misguided we often see a very noble spirit of brotherhood and of self-sacrifice. It is a class spirit, a class consciousness, a class devotion, but it only needs be broadened and enlightened to regenerate the race.

How Workmen Can Restrict Production

Several years ago, when I was in the government service, I received a letter one day from a Colorado Congressman, complaining that a mechanic in the Denver Mint was working as a strikebreaker during his vacation. I had occasion to visit the Mint later and showed the letter to the employee. He explained that he was trying to pay for a home and had not thought it wrong to earn some money during his vacation. The "strike," he said, was a technical one, declared a year or more before, because the shop was an "open" one. Then he told me that he had worked at that shop before he entered the Mint, and explained how it came to be made an "open" shop.

The shop was running upon a specialty, a small tool used in mining operations which was made upon a lathe. When he began he was green at the work, but he improved rapidly, and in a few days the foreman came to him and told him that he was killing the job. He thought the foreman meant that he was not turning out the tools as fast as he should, and he said: "I know I am green at it, but I am gaining. Last week I could make 30 a day, but yesterday I made 35 and I think I will soon make 40." "Good God!" said the foreman, "25 is the stunt!" The men with the foreman in collusion, were deliberately restricting the output of the shop.

Now, of course, those men thought they were doing something that would benefit other workingmen; what they were really doing was raising the cost of a tool that other workingmen had to buy. To whatever extent that practice pervades industry it enters into the cost of living, it's a drag upon industry and an obstacle to progress. It is economically wrong and morally wrong, and it dwarfs the ability of the workers themselves. No man can be a full man, no man can do himself justice or come into his full powers unless he does his honest best, not merely for his employer, but for the community of which he is a part and which is his real paymaster in the end.

Ignorant Conceptions Must Be Dissipated

That sort of thing is the result of ignorance; it is the result of a mental attitude and the only remedy for it is in a change of mental attitude. New light must come into a man's mind, a spread of enlightenment, as the morning dawn steals over the earth.

This ignorance exists, it pervades industry, it keeps down

production, it keeps down wages, it is a practical problem for management to deal with as it does with any other. A problem in psychology is just as real as a problem in chemistry, and it must be dealt with in the same spirit, with the same patience, and by the same painstaking methods, as a problem in chemistry.

And the ignorance is not confined to one class. If the wage-earners are sometimes mistaken, have the leaders of industry and society always been wiser? Have they always known the real springs of wealth, the real source of efficiency and always taken the larger view? Have they always understood their own best interests? Have they always appreciated that it was as truly in the employer's interest that a workman should be in fit condition for effective labor as that a workhorse or machine should be in fit condition? Have they always understood that a man works not only with his hands but with his spirit, and have they appealed to the spirit? Have any of us ever had an adequate idea of how the national wealth might be increased by developing the capabilities of the people?

Increasing Efficiency the Keynote of New Civilization

I attended a luncheon a number of years ago at which Sir Edgar Speyer of London and of the International Banking House, was the guest of honor. It was eight or ten years ago, when the Lloyd-George Budget was the uppermost topic in England. Lloyd-George was not as popular as he has been of late, and his Budget was sharply criticized by people who thought it was socialistic. Sir Edgar made a little talk to the company, and to the surprise of some of the party he endorsed the Budget. And the reason he gave was that England should make a stronger effort to raise the living conditions of her people. "England," he said, "must increase the efficiency of her people." I believe that is the keynote of a new civilization.

War Lessons Worth Remembering

We learned some things about community interests and self interests during the war which are good to remember. We learned that we were all interested in the prosperity, and in the personal efficiency and patriotism of every other man and woman. If any person was not doing his duty in Liberty Loan or Red Cross Drives the burden was greater upon all the others. If any farm was not producing up to the standard

we knew that it meant loss to the whole country. And all that is just as true in time of peace as in time of war. What would it be worth to the business interests of the country, and what would it be worth to every family of consumers if all the farms that are below the average in productiveness could be brought up to the present average? What would it be worth if the people in all occupations who are below the average could be brought up to the present average? The truth is that no community can afford to have a body of ignorant, degraded, inefficient people, any more than it can afford to have rich land in swamps.

Must Provide for the Advancement of All

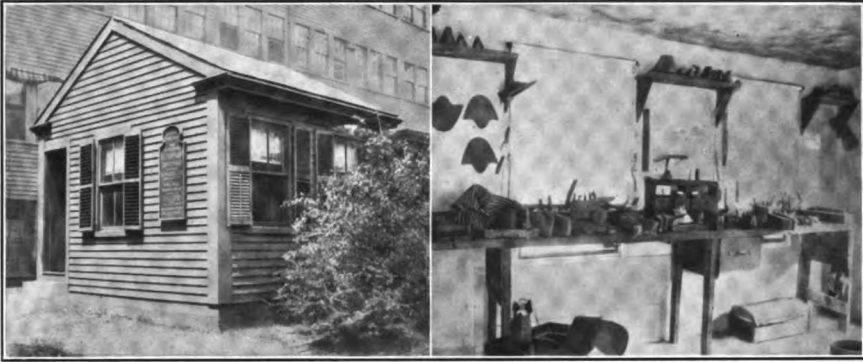
When the war broke out and England faced the greatest struggle of her history, she found to her alarm and dismay that all was not right at home. There was trouble with labor. There was suspicion, antagonism and almost rebellion on the part of the labor organizations, not only toward the employers but toward the government itself, and no matter how arbitrary or shortsighted their attitude was it was a weakness in the armor of England. It was a new demonstration of the essential unity of society, and of perhaps the most profound truth of social philosophy, that you cannot provide for the elevation of a part of society without providing for the elevation of the whole. And after all, is it not a most wholesome and beneficent principle, sufficient in itself to confirm our faith in the divine government of the world? You cannot protect the health of any part of the community except as you safeguard the health of all; and you cannot provide for the security and real progress of any part of the community unless you provide for the advancement, the development and enlightenment of all.

SHOES, AMONG OTHER THINGS

"The time has come," the Walrus said,
To talk of many things:
Of shoes — and ships — and sealing-wax —
Of cabbages — and kings."

We are all talking, or at least thinking, about shoes and ships, though not perhaps about sealing-wax and cabbages, or even now about kings. We are talking about ships because we are beginning to build up a merchant marine, and are speculating on whether it is going to turn out a paying investment. We are thinking, and most of us are talking, about shoes primarily because they cost so much. But shoes have or should have, great interest for us at this time for other reasons. They interest us for one thing because the shoe factories are beginning to substitute electric drive for steam power. They interest us also because shoes are a very substantial item in the exports of this country, and nothing is being more widely talked about at the moment than the future of American foreign trade.

The last United States census shows that in 1914 there were 1900 boot and shoe factories in the United States, employing about 206,000 wage earners; the value of the product being about \$500,000,000 a year. We may obtain some idea of the relative size of this industry by noting that in the same year, 1914, the value of the product of American cotton mills was slightly over \$700,000,000, and that of the wool manufacturing plants about \$395,000,000. During the first nine months of 1919 over \$53,000,000 of boots and shoes were exported from this country, an amount equal to more than one-tenth of the value of the output of the shoe factories in 1914. This showing, of course, is not as strong as would appear on the face, because the product of the factories in 1914 would today command a considerably higher price. Looking at the subject from the point of view of quantity rather than of value, there is food for reflection in the fact that in the first nine months of the present year over 15,700,000 pairs of boots and shoes were exported. In the same period last year less than 10,000,000 pairs were shipped out of the country. These figures roughly indicate the magnitude of the shoe manufacturing industry and the place it occupies at present in our export trade. They show why the industry is an interesting study for those investigating the future of our foreign trade.



**EXTERIOR AND INTERIOR VIEWS OF THE SHOP IN WHICH MR. GEORGE E. KEITH'S
PARENTS SEWED SHOES**

Note one of the present factories in the background of left-hand picture.



A COMPOSITE PICTURE OF THE PLANTS OF THE GEO. E. KEITH CO.

The writer had the opportunity recently of studying the operations of one of our great shoe manufacturing concerns, namely, the Geo. E. Keith Company. This particular organization is an especially interesting field of investigation because the factory investigated employs the electric drive exclusively and obtains its power from one of the companies under Stone & Webster management. Moreover, it is one of the largest establishments of its kind in the world, and maintains and operates stores for the sale of its product in more than 100 different countries. Furthermore, the company is the product of one man's business career, a fact which throws many side lights on the development of American industry.

In 1912, Mr. George E. Keith, the founder of the company, gave a banquet to all those who had been in his employ twenty-five years or more. The fact that eighty employees were present is of itself exceedingly interesting. The number will strike anyone as being surprisingly large, and as indicating a successful co-ordination of labor and capital in this particular establishment. Anyone studying the development of the shoe industry will be interested in some of the remarks that Mr. Keith made at this banquet.

He said that over fifty years before he was working at the bench in his father's factory. His father started in business about 1854. Together with his brother, the elder Keith had worked hard and had built up quite a business in the South. But when the war broke out all the work that they had accomplished was swept to the winds. Mr. George E. Keith said that when he started business there were practically no power machines except a stripping and a heel shaving machine. He left school at the age of sixteen and went to work cutting in his uncle's factory. When he was nineteen he began to save his money, and by the time he was twenty-two had \$1,000. "At that time," he said, "I heard the boys and men in the shop telling of buying stocks and making money, so I bought some land stock in Boston. I put in \$1,000. In three months I sold my stock and had \$500 left. It was the best lesson I ever learned, and I have never bought anything on a margin since."

At the age of twenty-four he was foreman of the cutting room and was getting \$3.00 a day. It was then that he decided to start in business for himself. "I remember," he said, "how my mother wept when I told her I had resigned and intended going into business for myself. She told me how foolish I was

to give up a good position for an uncertainty." However, he started in a small way and the first six months sold \$7,000 worth of goods. He cut all the shoes himself. He then made a few samples, packed them in one of those old-fashioned carpet bags and started out to sell shoes, making up his mind to go to Providence. His stock consisted of a bag of pegged Congress shoes. Arriving in Providence he went to one of the stores and showed his samples, and when he was asked his price he said he would sell for \$1.65 a pair. The merchant ordered two cases, sizes 6 to 10, there being no half sizes in those days. For eight years thereafter he took a check from this firm every month. "The funny part of it was," said Mr. Keith, "Mr. Greene took the credit of starting me in business. I then went over to New York and visited a store, the proprietor of which soon became a very good friend. He placed an order for five cases. He also claims the credit of giving me a start."

Subsequently he went to Philadelphia, and after traveling about all day without making a sale entered a store late in the afternoon. He sold ten cases and thought he had struck a gold mine. "I was so excited," he said, "I forgot to write the name of the firm down in my order book, and after I got back to the hotel I had to go down and get the name of the firm. We did business with these people for many years afterwards."

As showing the beginning of an industry of great magnitude, these reminiscences are both interesting and significant. At a time like this, when the whole world is complaining of working too hard, it is refreshing to read of some one who could not work hard enough, and we cannot help wondering if this particular industry, or if industry as a whole, could ever have attained any magnitude if the philosophy of labor as at present inculcated had been in vogue. At any rate we see here why it is that distinctions exist between persons in industry; why some become rich and others remain poor. Most persons complain that they are the creatures of circumstances. But here the fact is illustrated that none of us are creatures of circumstances to the extent that we fondly believe, and that man has quite as much power over circumstances as circumstances have over man.

On the grounds of the Geo. E. Keith Company at Campello, Mass., there is today a small wooden house about the size of an old time cobbler's shop, and on it is a tablet stating that here the father and mother of the head of the present Geo. E. Keith



THE WALK-OVER CLUB AND GROUNDS

Company sewed shoes. When one glances at this structure and then casts his eye around and views the rest of the plant, a feeling of amazement comes over him. Here are six enormous shoe factories, a five-story executive building, and a club house of the most approved character for the employees. And yet this is only one plant out of nine which the Company operates in different parts of the United States. But this does not tell the whole story, for the Company, which makes a feature of selling direct to the final consumer, has stores or agencies in one hundred and two different countries. In the vestibule of the Walk-Over Club previously referred to, there is a collection of the flags of all these various countries, and a glance at them will convey a clearer meaning of the last mentioned fact than words can do.

There are more than 5,000 work people in all the Keith factories and the annual output is about 5,000,000 pairs. Obviously there could have been no such output in the days before shoe machinery was invented. Mr. Keith told the writer that when he began business shoes were all hand sewed. The shoes supplied to the soldiers during the Civil War were all made under these conditions. In walking through a shoe factory today one marvels at the great number and variety of power machines now used. It is hard to conceive that ingenuity could be more effective than it has been in this particular field. The systemization of a shoe factory also amazes one. It may not strike the observer at the start, but as he goes from one process to another he quickly perceives the great amount of work that has been put into arranging the interior of a shoe factory.

The initial step of receiving, sorting and tagging the raw material is a study in itself. The thing is done with the intent to supply the workman at every stage of the manufacture of a shoe with his material, with practically no loss of time and no mental confusion. Shoes are roughly classified as high grade, moderate grade and low grade. The Keith Company is engaged entirely upon high grade. Its raw material has to be flawless and the cutting is all done by hand. It is interesting to watch a shoe cutter in a factory of this description. As he cuts, he handles the skin in every part in order to detect any flaw. If a flaw is discovered the skin is thrown out. If the skin is perfect he places a metal pattern on it around which he cuts with a knife by hand. Even to the untrained eye it is obvious that the task is the product of painstaking thought and long

experience, however much it may appear to be merely an act of second nature.

Skill seems to be the leading characteristic of a shoe factory. It is impossible to view the Keith operatives at work without acquiring enhanced respect for labor. All the operatives, both men and women, look intelligent, self-respecting and self-reliant. The writer frankly confesses that a good many of his ideas regarding labor were dispelled by what he saw in this factory. For example, he no doubt shared the view expressed so widely that labor today is not as efficient as in the past, but this idea did not stand the test of the Keith factory. The operatives work on the piece basis, and it is extremely doubtful if they could work any faster or with greater care than when the writer observed them a few days ago. They were unquestionably intent on turning out the largest and most perfect product possible.

Indeed, this was so apparent that when he questioned any one of them about the work or asked to have the piece in hand given to him for inspection, he felt obliged to reduce the interview to the smallest amount of time. He felt, in fact, that he would be putting the operative to a real pecuniary loss if he did otherwise. It should be added, however, that in every case the operative appeared eager to render as much assistance as possible. If we could feel sure that labor in general industry was characterized by the same eagerness to achieve results that was witnessed in this particular industry, our fears regarding the relations of labor and capital, and in fact, regarding the whole conduct of industry, would in large measure fade away.

It is not the purpose of this article to describe the making of a shoe, but merely to convey to the reader's mind by these few touches that the process has become in every sense of the word scientific. A shoe is quite a different thing from what it was in our youth, when a man sat down at a bench and made the whole thing, doing his sewing either by hand or by a machine operated by foot. The change has come about within a period of about half a century, a much shorter time than can be noted in the case of most other great manufactures. Power spinning and weaving, for example, were introduced in the textile industry at least a century and a half ago. As shoe machinery has been invented and put into use the character of the product has steadily improved. Thirty or forty years ago, if one was particular about his footwear, he bought what was known as

a hand-made shoe, the distinction between hand-made and machine-made being very rigid. Today, in the Keith factory, shoes are made by machinery which far transcend in quality those made by hand in former times.

To keep track of such an industry requires the highest commercial and financial skill. One can be in no doubt of this in going through the great executive building of the Keith Company, with its many departments which look after the selling and accounting and auditing and statistics and designing, etc. Here is a great economic institution in contrast to the small frame building with dimensions of only a few square feet, in which the founder of the business saw his father and mother sewing shoes in his youth.

The character of the goods produced by the Keith factory may be seen at a glance in the model room. Here are shoes of more than 400 different designs, representing the taste of many different nations and many different temperaments. The shoe made in large quantities for Latin-American countries differs, for example, very greatly in appearance from the shoe made for American wearers. It was hard for the writer to imagine that there could be so many different kinds of feet, or at least, so many different kinds of tastes. He was more than ever impressed with the fact that "There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy."

It is certainly amazing that so much could be accomplished in the lifetime of one man. The activities of Mr. George E. Keith have changed from those of a mere business to those of an institution, for that is what his plant now is. It is not only highly systematized and co-ordinated with reference to the buying of its raw materials, the manufacture of its product, the selling of the same, and the financing of the whole, but its activities also extend to the comfort and well-being of the operatives in their leisure hours. This last fact is clearly exemplified by the Walk-Over Club, which owes its name to the fact that the Keith Company makes the Walk-Over shoe. This club house was erected by Mr. George E. Keith and his associates, at an expense said to be in excess of \$100,000. It is an artistically designed concrete structure of extensive proportions, and has all the features of a highly appointed private club, and is flanked by a recreation field of many acres. The membership fee is merely nominal. The employees of the Keith Company are provided with club facilities of the highest and most refined type. The writer found himself envying them.

He also wants to express the pathetic pleasure he felt in viewing a bronze tablet in commemoration of Eldon B. Keith, eldest son of George E. Keith and formerly treasurer of the Geo. E. Keith Co., who died in London on February 23, 1919, while serving as a member of the United States Industrial Commission, appointed by President Wilson to study general labor and industrial conditions in Europe.

These remarks are to no purpose if they do not impress the reader with the idea that it is possible to conduct industry in a way so mutually advantageous to both capital and labor that maximum results will be assured to each, and the material interests of the whole community be advanced. We began this article with our mind fixed on the possibilities of American boots and shoes in our foreign trade of the future. Provided conditions are right at home for the manufacture of these articles, our position in foreign markets should be rapidly strengthened. The American shoe has always made a strong appeal to foreign buyers. Taking advantage of this fact, the Geo. E. Keith Company has already built up a foreign trade of great proportions, and the methods which it has employed in so doing are well worth the study of all who aim to play a larger part in American foreign trade.



IN MEMORIAM

THE ELEMENTS OF FOREIGN EXCHANGE

[Foreign exchange is one of the most vital questions confronting the world today. It is one, too, that presents many subtleties and complexities to the ordinary mind. The American International Corporation, having these facts in mind, has recently issued to its members a bulletin entitled "Foreign Exchange." Mr. Charles A. Stone, president of the corporation, in a brief introduction to the bulletin says: "The American International Corporation, with its subsidiaries, is engaged in foreign trade throughout the world. It has also investments of a more or less permanent nature in many foreign countries. To carry on intelligently our trade operations it is essential that we have an intimate knowledge of the day-to-day fluctuations in the foreign exchange markets, so that we may operate in a conservative and far-sighted manner. It is equally essential that we have a clear understanding of the fundamental principles which govern the wider movements over longer periods of time which ultimately outweigh the daily fluctuations, so that our permanent investments may be made upon a sound basis. This Staff Bulletin contains the simple statement of the fundamental facts and principles of foreign exchange. There has been added a brief description of the violent fluctuations produced in exchange markets by the war. . . . The opportunity that the war has furnished for a study of this subject is remarkable in that it has shown in abnormally high relief the workings of fundamental principles which in normal times reflect themselves only in small and frequently almost insignificant changes."

The bulletin in question was compiled by members of the Staff of the American International Corporation, who acknowledge their indebtedness to Mr. J. E. Gardin of the International Banking Corporation for advice and assistance, Mr. Gardin being admittedly one of the leading experts in this country in foreign exchange. The Bulletin consists of two sections, the first entitled, "The Elements of Foreign Exchange," and the second, "The War and the Foreign Exchanges." The first of the two articles which follow is an excerpt from the first of these sections; the second is from the second section, comprising the whole of the treatise on "The War and the Foreign Exchanges." — *The Editor.*]

"Visible" and "Invisible" Balances

Reverting to the "exchange equation" the factors may be divided into two classes, one of which may be termed "visible" and the other "invisible."

Among the "visible" factors are:

- (1) Exports (and imports) of merchandise.
- (2) Exports (and imports) of gold and silver.

They are termed "visible" because all countries keep more or less accurate statistics of the amount and value of merchandise, gold and silver exported and imported and these statistics are susceptible of analysis.

Among "invisible" factors are:

(3) Exports (and imports) of "securities."

(4) "Interest" due to (and from) foreign nationals or home nationals abroad on money borrowed or loaned abroad and returns from investments, in active business undertakings.

(5) "Services" — i. e. payments for transportation costs, insurance, etc., furnished to (or by) foreign nationals or home nationals abroad.

(6) "Loans" made or repaid to (or by) foreign nationals or home nationals abroad.

(7) "Travellers" — i. e. expenditures by visiting foreign nationals or by home nationals travelling abroad.

These are termed "invisible" factors because they are not matters of systematic public record and are not always susceptible of accurate analysis.

"Creditor" and "Debtor" Countries

A country is said to be a *creditor* country when it has *normally* an "invisible" balance in its favor from year to year, i. e. when the total of the amounts due to it on account of "interest," "profit," "freight," "insurance," "travellers," etc., is greater than the amounts that it must pay on these accounts.

A country which has *normally* a balance to pay each year on these accounts is said to be a *debtor* country.

(Note: At the outbreak of the war in 1914 Great Britain was the leading "creditor" nation of the world. She was supposed to have not less than \$20,000,000,000 of capital invested overseas, 50 per cent of which was invested within the British Empire and 40 per cent on the American Continent. Besides this she had large profits accruing from freight on her merchant ships, etc. France had some \$8,000,000,000 of her capital invested abroad, largely in Russia, Turkey, etc., and Germany \$5,000,000,000 mainly in Russia and South America.

Other "creditor" countries in Europe were Holland, Belgium, Switzerland and the Scandinavian countries. Italy was virtually "creditor" by reason of the remittances from her nationals in the United States and South America.

All the other nations of the world were "debtor" and the "invisible" balance against the United States was commonly estimated at about \$500,000,000 annually.)

In studying the position of a country with respect to its "exchange," then, there are four main points to be considered. These are:

(1) The volume and character of its currency.

(2) The volume and character of its trade.

(3) Its position with respect to the "invisible" factor above referred to.

(4) Its political situation, both internal and foreign.

In the case of countries whose exchanges are fully "anchored" to a *gold* mint-par, so that fluctuations in rates are relatively slight, the principal considerations will be concerning the seasonal ebb and flow of foreign trade, the movements of capital and the rise and fall of discount rates.

In the case of countries whose exchanges are fully "anchored" to a *silver* mint-par the principal consideration will be that of the price of silver.

In the case of countries whose exchanges are "unanchored" it will be necessary to follow closely at all times the facts affecting all four main classes of considerations above referred to, as any of them may influence "unanchored" rates very materially.

Effects of Fluctuations in Rates

Fluctuations in exchange rates may have an important effect upon the finance and commerce of a country. The nature of this effect and the reasons for it may be seen by supposing a concrete case:

A merchant is engaged in the importation of silk from China; he purchases, let us say, through Hongkong 100,000 pounds of silk for which he contracts to pay 500,000 Hongkong dollars. At the time he makes his purchase the rate of exchange at New York on Hongkong is 80 cents American per Hongkong dollar. If, therefore, he remits at once to Hongkong the money to pay for the silk purchased the 500,000 Hongkong dollars will cost him \$400,000 American money.

Let us suppose that one week later (the price of silk in the Chinese market and in the American market being unchanged) the rate of exchange on Hongkong at New York drops to 78 cents. It would now be possible for a second merchant, competing with the first, to purchase silk in China at the same price as that paid by the first merchant, namely five Hongkong dollars per pound, but at the lower rate of exchange only \$390,000 American money would be required to make the purchase of 100,000 pounds of silk in China. The second merchant would thus have an advantage over the first represented by \$10,000 on 100,000 pounds of silk, and he could afford to sell his silk that much cheaper in the American market and make the same

rate of profit as the first. The second merchant in such case would clearly command the market in America. His advantage accrues solely by reason of the decline in exchange occurring after the first merchant bought and paid for his Chinese silk. Moreover, the decline in exchange would not merely give the second merchant an advantage over the first merchant but it would also give Chinese silk an advantage in the American market over competing silks from other countries, exchange rates on which had not declined. It is evident, therefore, that the effect of the decline in exchange at New York on Hongkong is to stimulate exports of silk from China to America.

It is likewise evident that a rise in exchange on Hongkong at New York would operate in a contrary way — that is, would tend to check imports of silk from China to America.

What is true of silk is, of course, true of all merchandise or property of any description, and in general it may be said of any country that under normal conditions exports are stimulated and imports checked by rising rates of exchange on foreign countries, and vice versa.

In considering the effect of exchange rates upon the foreign trade of a country it is necessary to distinguish carefully between *falling* rates and *low* rates and between *rising* rates and *high* rates.

In the example above given, it is the *decline* in the New York exchange rate upon Hongkong which aids the second importer of silk over the first, for it is evident that the advantage of the second merchant arises from the fact that the *decline* in exchange enables him to break through the established level of silk prices, either by paying more for silk in China or offering silk at a lower price in America, and (whichever of these alternatives he chooses) thereby to command the market and the business as against the first merchant.

The equilibrium of silk prices, however, is quickly reestablished on the new basis — either by higher prices for silk in China or by lower prices for silk in America — and when this has happened there is no further stimulus from the *lower* exchange rate to exports of silk from China to America. In other words, it is the *fluctuation* in the rate and not the mere *level* of the rate which tends to affect foreign trade either way.

Consequently, the mere fact that a country possesses a depreciated currency, reflecting itself in very high rates for exchange upon other countries does not mean that these rates

are a perpetual stimulus to exports from that country. A stimulus from foreign exchange to either imports or exports arises only from change in the rate and is of necessity temporary. In view of the large depreciation now existing in the exchanges of many important countries, as for instance, Germany, this is an important thing to keep in mind.

Elimination of Risk in Trade Resulting from Exchange Fluctuations

The supposititious case above described will also serve to illustrate the method whereby importers (and exporters) may eliminate from their operations the risk of loss by exchange fluctuations.

Suppose that the *first* merchant importing silk from China contracts for 100,000 pounds at 500,000 Hongkong dollars and New York exchange on Hongkong is 80 cents at the time of his purchase. He is desirous of eliminating risks due to exchange fluctuation from his operations. It is evident that if he were able to sell all his silk at once in the United States *before* the rate of exchange altered, *exchange* could give him neither loss nor profit in his transaction. It is likewise evident that if he were able to sell *part* of his silk *before* exchange rates changed the chance of loss or profit from *exchange* would be limited to his unsold balance.

But it is also evident that if he did not at once make remittance to Hongkong upon contracting for his silk, but remitted only as he sold his silk in the United States he would eliminate altogether from his operations the risk of loss or chance for gain arising from exchange fluctuations. For, if exchange declined and he were compelled to sell his silk in the United States at a lower price by reason thereof, he would gain by the lower rate at which he could make remittances to Hongkong (as he sold his silk) as much as he lost by the lower selling price of silk.

From this is easily apparent the general principle of eliminating from import — or export — operations all risk of loss (or chance of profit) directly arising from fluctuations in exchange as distinguished from the ordinary risks of merchandising. The principle is that, other things being equal, the importer should purchase — and the exporter should sell — exchange *only as he disposes of his merchandise*. In other words,

he should aim always to be "short" of exchange on the country of origin to the amount of his unsold merchandise.

As long as he maintains this position his merchandising operations can show neither loss nor gain arising from changes in the exchange rate.

THE WAR AND THE FOREIGN EXCHANGES*

Commodities in process of manufacture and distribution are for the most part financed by borrowing. The chief function of commercial banking is the lending of money to manufacturers and merchants for this purpose. This is true not merely of domestic trade within the various countries, but it is also true of international trade.

London's Primacy

When the war broke out in 1914, London was the financial and commercial center of the world. Her primacy in this respect grew out of the fact that England furnished the widest possible market for all kinds of commodities, and the wealth and experience of her merchants and bankers was so great that she was able to finance the greater part of the international trade of the world. It was in her market that the acceptances representing international trade were for the most part discounted, and for this reason the Bank of England in normal times strongly influenced the rates of discount for the world at large. As a necessary consequence of this, settlements were largely made through London as the primary market for the foreign exchanges so far as the world was concerned.

At the outbreak of the war, virtually the whole world was in debt to London. Her discount houses held bills of all nations in their portfolios. France alone may have been relatively an exception in this respect, for French financing, so far as the money market is concerned, has usually leaned rather to the purely financial — as contrasted with the commercial — side. The French people have not been conspicuous in foreign commercial enterprise. They invested mainly in foreign government obligations rather than in foreign industrial or commercial enterprises. The Bank of France, unlike the Bank of England, was not an ultimate resort for the commercial borrowings of the world. In July, 1914, with the possible exception, therefore, of France, the whole world was in debt to London on current account.

Monetary Standards

All Europe, the British Empire, the United States and her possessions, and the principal South American countries were

*See the note to previous article.

in 1914 on the *gold basis*. In some cases there was a premium on gold, but except for this all were at least theoretically anchored to gold parities, so far as "exchange" was concerned.

China, Persia, Morocco, Salvador and Honduras were on a *silver basis*.

Chile, Colombia, Guatemala, and Paraguay were on a virtually inconvertible *paper basis*.

The effects of the war upon the respective positions of the countries of the world with special reference to their "creditor" and "debtor" status and with reference to their exchange rates may be most conveniently exhibited in *three* phases.

Effect of War on Exchanges — First Phase

The *first* phase was that of the period immediately preceding and immediately following the outbreak of hostilities. For several days preceding the actual outbreak of war, there was a rush on the part of all debtor countries to buy remittances on the three great creditor centers, London, Paris and Berlin. With the outbreak of hostilities there came a complete dislocation of the exchange fabric. All international trade clearing machinery went to pieces for a few days and all anchorages were broken as the risks and expenses of specie movements became prohibitive. Moratoria were proclaimed in many countries with the result of concentrating the greater part of the strain on those few countries which continued to make payments. They were put in the position of having to pay their debit balances without being able to collect the balances due to them.

In New York there was no moratorium. The movements in exchange rates at this center were highly illustrative of the chaos that prevailed. Two weeks before the war exchange at New York on England, France, Germany, Holland, Italy, Switzerland and the Scandinavian countries ruled around the mint par, and for several years had shown a premium or discount not greater than one to one and one-half per cent. With the outbreak of hostilities the exchange market "exploded" and on August 4th the following premiums were touched:

Sterling	44%
Francs	22%
Lira	6%

The result of this was that business in exchange was virtually suspended and it was not resumed on anything like a regular scale until a month or so later.

Second Phase

By October the exchange markets were entering on the *second* phase. The violent rush to remit to the principal belligerent creditor countries was over and the purchase of supplies in America and elsewhere for England, France and Russia had begun. The principal European exchanges at New York gradually declined. The premium on francs had totally disappeared by the end of October. So also had the premium on Swiss exchange. Lire had gone to a slight discount and the German mark was 7% below par. Sterling did not touch par, however, before December. By the end of 1914, with the exception of sterling, francs and guilders, which were at par, and Spanish exchange which remained at a slight premium, all European exchanges in New York had gone to a discount.

The effect of the growing "balance of trade" arising in America from the large purchases of supplies by the Allied nations was now commencing to be fully felt. So large had these purchases become in 1915 that notwithstanding the heavy sales of American securities in New York by Britain and France and notwithstanding the heavy shipments of gold by Britain to the United States through Canada, sterling and francs broke clear away from the mint par and in September, 1915, the sterling rate at 4.50 represented a discount of about 7%. At the same time francs were at a discount of 15% and lire at a discount of 24%. It being now manifestly impossible for the European Allied belligerents to cover their purchases of supplies in this country by gold exports and by sales of American securities, it became necessary for them to borrow directly in our markets, and in the Autumn of 1915 the Anglo-French loan, together with other foreign loans, was floated. By these borrowings Britain was able to replace the sterling rate at around 4.77, the discount as compared with mint par reflecting the cost of moving gold from England to America. By gold exports about equal to the supplies of new gold, by continued borrowings and by continued realization of all obtainable American securities, Britain managed to maintain sterling at this level throughout 1916. It was impossible, however, to reinstate either francs or lire at anywhere near the mint par.

The Neutral Exchanges

In 1916, a curious phenomenon had made its appearance in the New York foreign exchange market, namely, substantial

premiums on the exchanges of many of the small neutral nations. These premiums resulted directly from what has come to be known as the "pegging" of the sterling rate at New York. By the methods above described Great Britain maintained the sterling rate in the New York market at a level which represented about the gold import point allowing for the extraordinary expenses and the increase in insurance rates on the movement of gold. She did not, however, attempt to maintain the sterling rate anywhere else. The smaller neutral countries of Europe and, to some extent, of South America, which normally settled through London and which were all heavily in credit on current account so far as Great Britain was concerned, found in the New York exchange market a very advantageous rate for the sale of bills on London. They therefore drew on London through New York. This process threw upon New York the burden of settling for London, with the result that at New York the neutral exchanges were in enormous demand. In normal times a demand of this kind would have been met by export of gold. But circumstances arising from the war had put large gold movements out of the question. Moreover, some of these neutral nations did not desire gold. The Scandinavian countries which had piled up very large balances in New York had begun to discourage gold importations in 1915 and Spain did the same thing in 1916. As there was, therefore, no anchorage for the neutral rates, they rose substantially above the mint par. The same thing was becoming true in the cases of the South American countries and Japan, and for the same reason. The Allied belligerents were purchasing supplies heavily from those countries but were clearing through London via New York at the artificially maintained rate for sterling.

"Pegged" Sterling

This condition had become acute in 1917 when the United States entered the war. The scattered and sporadic borrowings by the Allies had gone about as far as they could go and Britain was near the end of her tether so far as maintenance of the rate for her exchange on New York was concerned. The opening of huge credits for Britain and the other belligerents, however, enabled continuance of the stabilizing process, but on the other hand it accentuated the difficulties of the exchange position as regards the neutrals. The premiums on their rates were by this time so large as to interfere seriously with business. Failing

the possibility of covering with gold, borrowing was the only alternative. Accordingly Spain, Japan, British India and several South American countries advanced credits to the Allies and to the United States and even Bolivia lent her credit to America. In this way exchange rates were brought somewhat more into reason but before this happened very high premiums had been seen — 50% in the case of Spain.

It should be noted that the distinctively *silver* exchanges remained throughout the war fairly well anchored to their mint parity, viz., the price of silver. China exchange, which is a purely “silver-basis” exchange, followed closely the price of silver, though occasionally there were brief temporary divergences owing to the violent fluctuations in the price of the metal. But the rise in silver brought the “bullion value” of the rupee of India (which is a *gold-basis* country of the *second* group) above the “gold exchange par” established in the nineties, viz., 16 d. per rupee, and an insatiable demand for silver developed in India. The British Government was thrice obliged to change the “gold exchange par” of the rupee, finally raising it to the present level of 22 d. per rupee. Notwithstanding this and notwithstanding the sale by the United States Government of a large amount of silver, it seemed to be impossible to satisfy the Indian demand.

Third Phase

With the conclusion of the armistice in November, 1918, the *third* phase commenced.

As the fighting was evidently at an end the Allied belligerents at once suspended purchases of supplies — except food — and cancelled all orders that could be cancelled. This at once reflected itself in the neutral exchange rates, all of which declined materially. The “pegs” were not immediately withdrawn from sterling, francs and lire in New York, but this was done early in 1919, and Britain then took steps to relieve herself of further burden of French and Italian credit which she had, in large part, up to that time, been carrying in the exchange market. The effect was a heavy fall in sterling, francs and lire.

Rates now being free to seek their own level without interference from borrowings, the temporary primacy of New York quickly showed itself. Exchange at New York on neutral centers of the world showed rates at par or a discount for the first time

in a long while. It is to be noted that this state of things was less the result of specie movements, than it was the result of the return of international commerce to something more nearly approaching normal conditions than had existed since the war broke out. It is true that even now there is an abnormal movement of foodstuffs from the United States, South America and elsewhere to Europe and it is also true that there has as yet been no resumption of international commerce in any general way. Nevertheless the cessation of huge purchases of war material by Europe has enabled a general ironing out of exchange rates the world over and permits us to form some general conclusions as to the ultimate effect of the war upon the various countries of the world so far as their creditor or debtor status is concerned.

Europe's Debtor Nations

In Europe, Germany and Austria, the Balkans and Italy are clearly doomed to a "debtor" status for an indefinite period. France — unless she receives a large and real indemnity from Germany and unless her investments in Russia and Turkey shall be revitalized — seems also likely to be a debtor nation for some time to come. The Scandinavian nations are probably unchanged as to their status, as are also Holland and Switzerland.

Britain Still Creditor

Great Britain, although she has been obliged to sell a large part of her American investments and, besides, to borrow largely in America for herself and for her allies, will still remain unquestionably the largest creditor nation in the world. Unless her government adopts a wholly unsound policy with respect to her finances it seems certain that sterling will ultimately re-establish itself at par. The extent to which she will regain her former primacy in the exchange market will depend upon America's policy to which reference will presently be made.

South America

The South American countries in general were amply stocked with imported merchandise when the war broke out and owed a considerable sum of money to American, British and German merchants against these goods. The war prevented a continuance of imports on a normal scale and these stocks of merchandise gradually went into consumption. Many of these countries, moreover, were called upon to furnish large quanti-

ties of foodstuffs to Europe so that their merchandise exports increased rapidly while their imports were diminishing. By reason of this, large balances on current account were accumulated against Europe and America which could not be completely settled in the ordinary way of trade or by import of gold, and several of the South American countries — notably Argentina — now possess important credits in Europe and America. These credits are an offset to the pre-war "debtor" status of these countries and have tended strongly to improve the position of these countries so far as their exchanges are concerned.

Japan

Japan has become — and may be permanently — a creditor nation.

America's Changed Position

America's position has been strikingly changed by the war. In the five years ended June 30, 1919, her exports of merchandise gold and silver exceeded imports in a total sum of nearly thirteen and one-half billions of dollars. It is, moreover, certain that in the current fiscal year — and very probably that in the next — there will be a large addition to this sum, for the world still imperatively requires from us enormous supplies of foodstuffs, material and machinery. Before the war there was an annual "invisible" balance against us which was commonly reckoned at about four hundred millions of dollars and we were a debtor nation to that extent. This balance has been already wiped out by our exports during and since the war, and it is most probable, that, by the time that international trade relations settle down again on a normal basis, we shall have created an "invisible" balance in our favor at least as large as that which was against us in 1914.

We shall have to extend very large credits, for the world must borrow from us the commodities that it needs now. It has at present no available means of paying for these things. This will place us in a dominant position as regards the exchanges of the principal countries, and the present phenomenon of a premium on the dollar at the great financial centres of the world is likely to persist for some time to come. Another most important consequence of our commanding position is the opportunity that it will give us of permanent investment in foreign enterprises. The world in general cannot expect to discharge

the principal of its debt to America by the ordinary processes of trade, although it may reasonably expect to settle the interest in that way. It is clearly to the advantage of all parties that we should permanently invest our principal in the opportunities that are now offered and that will be offered by foreign nations. In this way we shall assure to ourselves a permanent position in the ranks of the great creditor nations of the world. Already we have begun to exercise some of the functions proper to that position. We have developed at least the beginnings of a genuine market for acceptances so that we may hope to divide with London the task of financing our own international commerce and that of other nations. We are in this respect London's only competitor, and while she will in all probability still do the lion's share of this business, our share should steadily grow and New York should become the primary market for exchange of many countries.

It is most important, however, that our people should turn their attention to foreign securities and the possibilities that they offer. Many countries — especially, perhaps, our South American neighbors — contain possibilities from which we may derive an assured and a satisfactory income on our capital while we furnish to these countries the means that they require for their full development.

GOOD HONEST WORK

BY W. H. BLOOD, JR.

"It is an economic absurdity that in three or four days a laborer can earn enough to care for all his wants as well as those of his family for seven days," said a well-known Government official. This condition exists today and it is one of the controlling factors in our present high cost of living. During the war it was particularly noticeable and contributed to our slowness in getting ready to fight, and added much to the cost of everything that entered into the war. It was probably wise, under the stress of circumstances, to pay high wages, but the various wage adjustment boards failed to require of the laborers any extra exertion or even a promise to keep at their tasks six days per week. The high wages in the shipyards, for example, attracted men of all classes. Some of these were loyal workers; many were lazy loafers. These latter made a bluff at working three or four days a week; they "laid off" the other days. They got the habit during the war period. The habit spread and today nobody wants to do any physical labor. Carpenters and some other crafts have laid down the rule that no work is to be done on Saturday, in spite of the fact that the "Good Book" says, "Six days shalt Thou labor and do all Thy work."

The coal miners have been demanding a five-day week of six hours per day, which means about twenty-five hours per week of actual mine operation. This certainly is an economic absurdity, for it means that capital works 168 hours per week while labor works but one-seventh of the time. About ten dollars per day is said to be a fair average of what a coal miner now earns. Many work only three days per week, but in that week they earn thirty dollars, which is all they seem to want. It is a well-known fact that while the rate of wages in the coal industry has been raised several times in the last few years, the weekly earnings have remained practically constant. Thirty dollars per week provides all that their accustomed habits of life demand; habits so strongly fixed that the ambition to depart from them is lacking. The official record shows that in 1917 the bituminous coal mines, taken as a whole, were operated about two hundred days in the year on the average. This does not mean that all the miners worked two hundred days; as a matter of fact, one hundred sixty or one hundred seventy

days would probably be a closer average. Most operators would gladly run their mines a full week, but they cannot get the miners to work steadily, and the question may properly be asked, "Why should they work six days if, in three or four days, they can earn all they want?"

Who is it that has decreed that a work day shall consist of eight hours? Why eight hours; why not seven and, by the same token, why not ten? In 1888 and 1889 the head of our organization and many of his present associates worked with their hands at least ten hours every day and frequently twelve or fourteen hours per day, and these so-called long hours have hurt none of them. Today these same men are working with their heads instead of their hands. The hours are fully as long and the work is harder. The eight-hour day is an American bogey on a par with the five cent carfare. Neither of them has any economic basis for its continuance. We are beginning to realize that the five cent carfare is a thing of the past. Some day we may see that some industries require twelve hours per day while others may be able to get along with six; never, until this day comes, will the cost of the finished products be what they ought to be. The prayer of every good American should be, "May this day come quickly."

Meanwhile, the world is starving. The scarcity of the things that we eat and wear and use in our daily life is appalling. The shelves are bare, and yet in the face of this the laborers of the country are demanding shorter hours and more pay. When will their demands be satisfied? Can the "vicious circle" never be broken? Must it grow larger and larger? Prices will continue to mount if the public yields to the demand for more pay and less work. It is surely time to call a halt. We must produce more, or else the starvation will continue. Increased production will bring with it high pay; any other method of relieving the present acute condition is economically unsound. How very pertinent was Vice-President Marshall's remark the other day — "I want an industrial democracy, but we are not going to get one until we have an industrious democracy."

The curious fact is that each class of labor reasons that if it "gets theirs" the problem is solved. It fails to see that the carpenters must also get theirs, the plumbers, too, and the masons and, in like manner, every trade or occupation, and that this, in turn, means higher rents, increased cost of clothing, and, in fact, of everything that is used in our daily life. In the

end no one profits by the general raise in wages, while, on the contrary, many suffer because of the inequalities of the advance.

It is the cheapest kind of cant to come before the public and say, "See what we did during the war; see how hard we worked." All true Americans did that. It was their simple duty and has no comparison with that of the boys who went overseas, some of whom made the supreme sacrifice, while others were maimed for life. Why should any class ask for a special reward for working hard during the national emergency? The public will not stand any such demand.

And now that the war is over the country must be readjusted to new conditions. The industries of peace must be revived. The merchants' shelves must be refilled. Commerce must be set flowing in constant and normal streams, and there is but one way that this can be accomplished — by good honest work. Don't be a shirker, but give all that is in you of honest faithful service. Prove yourself to be a worker that is worthy of his hire.

BUSINESS CONDITIONS IN STONE & WEBSTER LOCALITIES

The managers of the companies operated by Stone & Webster write to the Management Division of Stone & Webster about the first of each month with reference to business conditions in their respective localities during the preceding month. A digest of these letters is published each month in the Stone & Webster Journal.

Baton Rouge, La., November 18th:

Building permits for October, 1919, were valued at \$45,635, against \$6,219 last year.

The average number of employees at the Standard Oil Company in October, 1919, was 2,895, against 1,777 last year.

General business conditions continue very good, and from all indications are likely to continue so.

The sugar cane is being harvested, and owing to this fact, colored labor is very scarce. This year's crop will not be as large as last year's.

The receipts of the Baton Rouge Electric Company for October, 1919, show an increase of 31.2% over last year.

Beaumont, Texas, November 12th:

Bank clearings at Beaumont for October, 1919, were \$5,867,773, against \$6,383,789 last year.

During October, 1919, 55 building permits were issued at Beaumont, valued at \$67,618, against 60 last year, valued at \$48,231. At Port Arthur 29 building permits were issued, valued at \$27,480, against 21 last year, valued at \$8,185.

The general business outlook for the next few years is good, despite the labor troubles.

During the early part of October there were excessive rains, which interfered greatly with the harvesting of the rice crop. During the latter part of the month, however, there was considerable good weather, and the farmers as a rule are not complaining, since rice is selling at very high prices, which will probably more than compensate loss in production.

The general unrest which has prevailed among the labor elements during the last two or three months has finally resulted in strikes involving about 1,500 men in Beaumont. These strikes began at various dates from October 1st to October 21st and they tied up the entire business affairs of the city.

The Port of Beaumont has been very busy the last month.

Several of the shipyards have recommenced work finishing hulls on which no construction has been done for several months.

There is a great demand for new houses and considerable construction is under way at Port Arthur.

The contract for the new hotel at Beaumont has finally been let and active construction will begin in a very short time.

The Texas Ice Company, which takes current from the Eastern Texas Electric Company, is going to double the size of its plant for the 1920 season.

The receipts of both the railway and lighting departments of the Eastern Texas Electric Company for October, 1919, were excellent, those of the railway department showing an increase of 60% over 1918, and those of the lighting department an increase of 27%. It should be said, however, that this increase is in part due to the fact that receipts last year were lower than usual owing to the influenza epidemic.

Bellingham, Wash., November 11th:

Post office receipts at Bellingham for October, 1919, were \$7,869, against \$9,300 last year.

Building permits at Bellingham for October, 1919, were \$37,478, against \$47,545 last year.

General business conditions continue good. Practically all industries are running to capacity.

Brockton, Mass., November 12th:

Bank clearings for October, 1919, were \$18,787,248, against \$15,441,-216 last year.

Bank deposits during October, 1919, were \$17,340,551, against \$14,769,393 last year.

During October, 1919, 60 building permits were issued, valued at \$292,205 against 12 last year, valued at \$16,870.

Shoe shipments for October, 1919, amounted to 75,663 cases, against 63,087 cases last year. For the first ten months of 1919, shipments were 631,808 cases, against 524,586 cases last year.

Brockton's new White Way was inaugurated on October 31st. The turning on of the 118 lights was the occasion of a celebration, with parade and fireworks, band concert and community singing. The float of the Edison Illuminating Company of Brockton was awarded second prize.

The local Chamber of Commerce reports a large demand for factory space for new concerns desiring to locate here. For several months the demand has far exceeded the supply.

Columbus, Ga., November 22nd:

Bank clearings for October, 1919, were \$7,471,903, against \$4,635,459 last year.

Post office receipts for October, 1919, were \$10,500, against \$11,691 last year.

During October, 1919, 17 building permits were issued, valued at \$58,400, against 1 last year, valued at \$1,500.

All classes of business men seem to be very optimistic. They look for a continuation of the present high wave of prosperity.

The cotton crop is below normal, but as a result of the high prices of the staple, the farmers are buying heavily of retail merchants.

The county and community fairs of the past few years have educated the farmers in crop diversification and stock raising, and the farmers have found that there is money to be made even if the cotton crop is a failure.

The manufacturing industries have found it necessary to operate at night in order to meet their orders.

One of the largest brick manufacturing industries has sold its plant and the new owners announce that they are going to double the capacity.

The automobile business is on the increase. One of the large dealers in cars recently stated that money seemed to be very plentiful and that he was selling for cash every car that he could obtain, having only about \$3,000 in mortgage notes on hand. Four new garages are being erected.

The railway receipts of the Columbus Railroad Company for October, 1919, show an increase of about 118% over last year. Light and power receipts also increased handsomely.

El Paso, Texas, November 4th:

Bank clearings for October, 1919, were \$29,460,050, against \$22,257,256 last year.

During October, 1919, 146 building permits were issued, valued at \$317,784, against 74 last year, valued at \$16,396.

The above figures sufficiently reflect business conditions during October.

Everett, Wash., November 8th:

The feature in the lumber and shingle industry is the shortage of care. This shortage seems to have been in part the occasion for an unprecedented demand for lumber. The Federal Railroad Administration put into effect a very heavy demurrage charge, in order to force prompt unloading of cars, which had the effect of depressing the market price of lumber somewhat, and this, in turn, brought a large number of people into the market because of the opportunity to buy somewhat advantageously. This immediately strengthened the price situation, and there is now a very heavy demand for spring stocks of lumber, which would not ordinarily be purchased until thirty or ninety days from now. One lumber man expressed the opinion that an exceptionally heavy demand should continue throughout 1920, and that it will, in his judgment, be far in excess of available car supply. The statement has been made that lumber products from this city are now being shipped into sections of the country never before served by the local mills.

Several weeks ago the prices of all grades of shingles fell off approximately \$1.25 per M, but the market has strengthened some and there has been a recovery of about 50c per M. The demand is fairly good, but the car supply is about half what it should be, and the local mills are running about 50% of their capacity.

Fall River, Mass., November 5th:

Bank clearings for October, 1919, were \$13,403,845, against \$10,454,595 last year.

During October, 1919, 75 building permits were issued, against 17 last year.

At the present moment it looks as if the cotton mills of this city might continue making money for the next few months, though with the coal mine strike shutting off shipments of steam coal and the possibility of local labor troubles, there are elements of uncertainty that may upset any calculations.

Fort Worth, Texas, November 3rd:

Bank clearings for October, 1919, were \$92,198,617, against \$69,935,-517 last year.

During October, 1919, 196 building permits were issued, valued at \$2,111,065, against 29 last year, valued at \$22,603.

Stockyards receipts in October, 1919, were as follows:

	1918	1919
Cattle	144,774	148,496
Calves	39,134	35,581
Hogs	38,822	39,066
Sheep	25,332	27,443
Horses and Mules	10,995	13,680

Bank clearings continue to show an enormous increase, as indicated by the above figures. Building also continues very strong. The above figures are highly exceptional, owing to very unfavorable weather conditions throughout the month, which undoubtedly prevented a good many permits being taken out. The above figures represent 123 residences, valued at \$439,760, which indicates that the housing situation is being rapidly taken care of; of this class of permits, 13 are for residences that cost \$10,000 or more, 30 to cost \$5,000 or more, and 59 to cost \$3,000 or more.

The general business outlook for the immediate future continues very promising. Merchants are expecting a business this winter which has been surpassed by none in the history of this community.

Owing to the Dallas Fair and as a result of the general prosperity of the community, the receipts of the Northern Texas Traction Company for October, 1919, exceeded those of any month in the company's history. The city division shows an increase of 38.5%, while the interurban division shows an increase of 144%.

The local labor situation seems to be unusually quiet in all industries. There has been some discouragement, owing to the lack of cotton pickers, as most of this class of labor has been used either in the oil fields or in other lines of business, making the cotton gathering unusually slow this year.

Receipts of the Tarrant County Traction Company for October, 1919, show an increase of 43.5% over last year. This very well represents the general condition of the community to the south of Fort Worth.

Galveston, Texas, November 7th:

Bank clearings for October, 1919, were \$47,495,942, against \$34,081,-858 last year.

The volume of business for October, 1919, was \$184,973,000, against \$127,555,000 last year.

Post office receipts for October, 1919, were \$15,401, against \$18,161 last year.

During October, 1919, 514 building permits were issued, valued at \$47,754, against 373 last year, valued at \$21,071.

The foreign trade tonnage of the Port of Galveston continues to increase.

During October, 1919, 3,194,107 bushels of wheat were exported from Galveston, an increase of 1,653,865 over last year.

The railway receipts of the Galveston Electric Company for October, 1919, show an increase of 30.48% over last year, and an increase of 2.22% over September, 1919. Lighting receipts for October, 1919, show an increase of 36.82% over last year, and an increase of 4.25% over September, 1919.

Haverhill, Mass., November 12th:

Savings bank deposits on October 31, 1919, were \$15,500,541, against \$13,939,052 last year.

During October, 1919, 58 building permits were issued, valued at \$196,650, against none last year.

There has been no change of importance in the general business situation during the past month.

Houston, Texas, November 10th:

Bank clearings for October, 1919, were \$152,255,750, against \$83,745,929 last year.

Building permits for October, 1919, were 428, valued at \$1,257,324, against 136 last year, valued at \$40,412.

Real estate transfers for October, 1919, were \$2,614,908, against \$733,680 last year.

In the face of high cost of labor and building material there has been no slowing up in the construction of new buildings. Each month this year has shown an increase over the previous month in the number and value of building permits, and the total for the ten months of this year has exceeded the whole of any year on record with one exception.

The construction of homes continues to lead all other classes of building operations by a large percentage, but home building is confined to the older sections of the city. This feature of the situation is particularly advantageous from a street railway point of view.

General business conditions in Houston are reported as being in a very healthy state, but the rural section is not so fortunate, owing to defective crop conditions. Live stock is reported in very fair condition, but the movement of fat stock to the markets is not very heavy at the present time.

Jacksonville, Fla., November 7th:

General business conditions show quite a substantial improvement over September, which was itself a record month. The real estate market has been very active, an unusual amount of building having been started.

Coastwise and foreign vessels to the number of 173 arrived in Jacksonville during October, 1919, this being the largest number since the ending of the European War.

Key West, Fla., November 4th:

Customs receipts for October, 1919, were \$80,964, against \$31,755 last year.

The cigar output for October, 1919, was 7,374,300 cigars, against 8,060,696 cigars last year.

The general business outlook for the immediate future is good. Every available workman in the city has employment. Merchants report a fine business and expect a continuance of the same.

Lowell, Mass., November 14th:

Bank clearings for October, 1919, were \$5,642,007, against \$6,289,748 last year.

During October, 1919, 101 building permits were issued, against 47 last year.

The outlook for the immediate future of general business seems bright.

The lighting income of The Lowell Electric Light Corporation for October, 1919, increased about 39% over the previous year, while power income, which fell off early in the year owing to discontinued war activities, has reached the point previously attained and will, it is believed, soon surpass any preceding figures.

Pawtucket, R. I., November 10th:

The banks report an increase of 87% in commercial accounts over the corresponding period of 1918, and a decrease of 10.1% in savings accounts.

Post office receipts for October, 1919, were \$16,966, against \$20,523 last year.

During October, 1919, 14 building permits were issued, valued at \$232,900.

General business conditions in October are reported as having been all that could be desired.

Manufacturers report orders on hand that will keep them busy for months to come. Lack of labor and delay in receiving raw materials as a result of the longshoremen strike are the chief handicaps. There is no line of manufacturing that is not running to full capacity, and night shifts are the order of the day when sufficient help can be secured.

Makers of textile machinery state that they are daily obliged to refuse orders owing to the amount of contracts on hand.

The building trade is good, but largely confined to the erection of mills or the additions thereto. Only a few dwellings are being constructed, although the need for such is great.

Pensacola, Fla., November 24th:

During October, 1919, 102 building permits were issued, valued at \$64,344, against 97 last year, valued at \$13,188.

It is rumored that the Pensacola Shipbuilding Company has been awarded a contract for the construction of four 16,000-ton steel ships. The plant has made a good showing during the past month. The launching of the sixth ship has been scheduled for November.

Work on the building of the large dry docks for the Bruce Dry Dock Company is making good progress.

The Gulf, Florida & Alabama Railroad Company which has been

in the hands of a receiver for the past two years has been sold to the bondholders.

The harbor is beginning to show some signs of activity. About thirty torpedo destroyers are here and several steamships for cargo are berthed at the local docks. During the month a cargo of ties valued at approximately \$70,000 was shipped to Ireland. A cargo of mahogany logs was received during the month and several other large cargoes were exported from this port, one of which, a mixed cargo, was valued at more than \$1,000,000.

Due to a strike the fish industry is at a standstill, with the exception of the small boat fishers, which contribute a very small share of this business.

Both the railway and the lighting receipts of the Pensacola Electric Company for October, 1919, show increase over last year.

Ponce, P. R., November 21st:

During October, 1919, 2 building permits were issued, against 2 last year.

General business conditions during October, 1919, were below normal, on account of the longshoremen's strike in New York Harbor, there being no boats to bring commodities to the Island or to take away fruit and other merchandise.

It is believed that the Government will take off the set price on sugar to the refiners and will let supply and demand govern the price of this commodity. The sugar people are already talking 10c to the refiners. Native sugar unrefined is selling at 14c per pound.

Reno, Nevada, November 18th:

Bank clearings for October, 1919, were \$4,444,838, against \$3,034,012 last year. For the first ten months of 1919 they were \$32,910,028, against \$25,389,191 last year.

Post office receipts for October, 1919, were \$10,529, against \$12,703 last year.

During October, 1919, 18 building permits were issued, valued at \$34,050, against 5 last year, valued at \$7,075.

This month's building permits includes 6 new dwellings, indicating that the increasing demand for houses has forced construction notwithstanding the high cost of building operations.

The continued hot weather during the summer, together with the late fall, permitted a considerable proportion of the ranches near Reno to cut three crops of alfalfa, as compared with two in other years. This, in addition to the prevailing high prices obtained for hay, has made this a prosperous year for the ranches.

October receipts of the Reno Power, Light & Water Company exceeded expectations, this being true both of wholesale and retail receipts.

Savannah, Ga., November 11th:

Bank clearings for October, 1919, were \$69,977,569, against \$45,750,745 last year.

During October, 1919, 81 building permits were issued, against 18 last year.

Cotton receipts for October, 1919, were 258,697 bales, against 151,210 bales last year.

Turpentine receipts for October, 1919, were 5,955 barrels, against 3,676 barrels last year.

Rosin receipts for October, 1919, were 19,793 barrels, against 17,253 barrels last year.

Activity in the manufacturing districts of Port Wentworth continues. The Terry Shipbuilding Corporation is at present actively engaged in turning out several ships. The Savannah Dry Dock & Repair Company began its first month of appreciable operation. Activity in naval stores, and particularly in cotton, is considerably in excess of last year.

There is at present an almost phenomenal boom in the erection of houses for residential purposes and also for commercial purposes.

Seattle, Wash., November 12th:

Bank clearings for October, 1919, were \$198,507,453, against \$204,777,169 last year, and \$124,055,778 in 1917.

Building permits for October, 1919, were valued at \$1,434,440, against \$1,273,390 last year.

Real estate transfers for October, 1919, were \$2,556,334, against \$1,535,230 last year.

Bank clearings for the first ten months of 1919 have now passed the billion and a half mark for the first time. Building permits and real estate transfers for the same period are both in excess of \$6,000,000.

The labor situation is steadily improving.

An interesting and unusual piece of business was the arrival on October 27th of the Government collier, "Nanahan," from the Priflof Islands, bringing 26,185 seal skins, valued at about \$3,000,000, and twelve live foxes valued at \$500 each. This is the first cargo of seal skins to arrive for a number of years, and it created considerable stir along the waterfront.

The month of October was probably one of the most satisfactory in the history of Seattle from a real estate standpoint.

Sydney, Nova Scotia, November 20th:

During October, 1919, 55 building permits were issued, valued at \$72,768, against 40 last year, valued at \$47,500.

Customs receipts for October, 1919, were \$35,663, against \$43,661 last year.

The output of the Dominion Coal Company for October, 1919, was 280,285 tons, against 275,890 tons last year. Shipments were 271,858 tons, against 320,231 tons last year.

It will be noticed that the output of the Dominion Coal Company was somewhat larger than in October, 1918, and it seems reasonable to expect that the output will continue to increase from now on. The Coal Company has lately found a new and expanding market for coal in Holland and France. A considerable number of Dutch ships have recently loaded coal in Sydney Harbor for their own country. On October 14th, however, the

Canadian Government placed an embargo on all overseas shipments of coal and bunkering of ships except on a license, which must be obtained from the Canadian Trade Commission. Licenses have so far been granted, so there has been no serious delay. This matter of embargo came about largely because of the coal strike in the United States, which has restricted shipments to Canada, and the Canadian Government has, therefore, been worried lest there should not be enough coal to go round.

During the week of November 11th the Dominion Coal Company completed its shipment of coal for this year up the St. Lawrence. Shipments to Montreal this year have amounted to 333,600 tons, a portion of which was delivered to the Canadian Northern Railways. Shipments up the St. Lawrence in recent years have been exceedingly small, owing to war conditions, loss of shipping and American competition.

The Dominion Coal Company has recently made application to the Commissioner of Mines for permission to open up a new mine at Bonar Point, which lies between Sydney Mines and Little Bras d'Or. President Workman announces that his company will be able to get from this mine a higher grade of metallurgical coal than it has been possible to secure from their present mines. The Coal Company has also recently opened up a new colliery known as No. 4, or the Victoria Mine, near Big Glace Bay Lake. From this colliery they expect to obtain about 700 tons per day within a short time.

On November 19th, it was announced that operations would shortly be resumed at the steel plant of the Nova Scotia Steel & Coal Company in Sydney Mines. This means the employment of 300 to 400 men. Except for two open hearth furnaces which have been moving slowly, the plants have been practically idle since June, and there has been no great activity there during the past year.

At the Dominion Iron & Steel Company at Sydney the blooming and billet mills resumed partial operation on October 6th. The rail and rod mill has been in operation steadily.

It is reported that fire clay has been discovered on the farms at Leitches Creek near Sydney, and that the Dominion Iron & Steel Company will develop the deposits. They use about 2,000,000 fire bricks worth about \$350,000 each year, and these bricks are now imported from the United States and Scotland.

At North Sydney the steamship, "Permanencia," a concrete vessel of 500 tons dead weight capacity, which has been in process of construction for some time, will shortly be launched.

General business conditions continue fair, although not so active as last year, owing to the partial shutdown at Sydney and Sydney Mines.

Tacoma, Wash., November 8th:

Bank clearings for the first ten months of 1919 were \$19,091,175, against \$19,039,417 last year.

During the first ten months of 1919, 3,434 building permits were issued, valued at \$2,526,063, against 2,647 last year, valued at \$2,572,875.

Real estate transfers for the first ten months of 1919 were \$4,232,349, against \$3,472,506 last year.

The coal miners' strike which went into effect November 1st has been a quiet one. The daily production of coal in Pierce County is placed at about 1,500 tons. In the state for the first six months of 1919 the production was 1,665,000 tons.

Arrangements for financing the new \$1,000,000 Scandinavian-American Bank Building in Tacoma have been completed. The building will be a fifteen-story structure.

Tampa, Fla., November 14th:

Bank clearings for October, 1919, were \$8,229,178, against \$6,151,433 last year.

Post office receipts for October, 1919, were \$47,063, against \$28,075 last year.

Building permits for October, 1919, were valued at \$179,080, against \$6,325 last year.

Customs receipts for October, 1919, were \$169,431, against \$124,899 last year.

Internal revenue receipts for October, 1919, were \$373,982, against \$160,695 last year.

Cigar manufactures for October, 1919, were 43,057,660 cigars, against 30,227,500 cigars last year.

Building permits make the largest showing for any October since 1913. A great deal of this is for repairs among houses requiring attention following a long period of neglect during the war.

The outlook for the future is exceedingly bright.

Woonsocket, R. I., November 16th:

During October, 1919, 19 building permits were issued, valued at \$112,145.

General business continues excellent in all lines, and indications point to a continuance of good conditions for some time to come.

The labor situation is quiet.

Mills and factories continue to operate at full capacity. Although there has been no marked improvement in the labor situation, many companies are increasing their consumption of power appreciably.

Retail business is reported as practically equal to last year, and the outlook is considered good.

News from the Companies

Boston Office

Mr. F. S. Pratt has been in Seattle.

Mr. R. M. Harding, local manager at Columbus, Ga., was at the Boston office recently.

Mr. A. B. Williams, formerly of the Interborough Rapid Transit Company, has entered the mechanical division, Division of Construction and Engineering.

Mr. S. P. Melville, formerly of the Drafting Division, has become a member of the Electrical Division.

Mr. A. H. Sweetnam, of the Division of Construction and Engineering, has just returned from a two months' trip to Texas.

Mr. George E. Tebbetts, formerly general manager of the York River Shipbuilding Corporation, has joined the Stone & Webster organization, and is attached to the Structural Division.

Mr. J. H. VanderVeer of the Division of Construction and Engineering, is now connected with the Electrical Division, and for several weeks has been in Passaic, N. J.

Mr. T. Whitney Blake, president and treasurer of the T. Whitney Blake Company, New Haven, Conn., and secretary and treasurer of the Goodyear Rubber Insulating Company, died suddenly on November 27th at his residence on Fifth Avenue, New York. Mr. Blake was the first head of the Stone & Webster Laboratory.

The Queens Borough Gas & Electric Company has requested Stone & Webster to design and construct an extension to its boiler room. Stone & Webster have also undertaken to design and construct 100 miles of pipe line, pumping stations, etc., for the White Oil Corporation; to construct a Community Building for the Westminster Church Corporation, Detroit, Michigan; to design and construct a power station at Kokomo, Indiana, for the Pittsburg Plate Glass Company, Pittsburg, Pennsylvania.

Miss Marion E. Grady entered the treasurer's office on November 12th, and Mr. Howard E. Huckins and Mr. Albert H. Daggett entered the treasurer's office on December 2nd.

Mr. F. L. Hopkins was transferred on November 22nd to the Electric Light & Power Company of Abington and Rockland, as assistant treasurer of that Company.

Mr. O. L. Jones was transferred on November 22nd to the Cape Breton Electric Company, Ltd., Sydney, Nova Scotia.

Mr. Clifford Trull was transferred on December 8th to the Edison Electric Illuminating Company of Brockton, as assistant treasurer of that company.

Mr. Luther R. Nash has returned from Texas.

Mr. John J. Madden of the securities department was recently in receipt of the following:

THE YANKEE DIVISION

Discipline and Stout Hearts

Sergeant-Major John J. Madden,
Hq. Co. 101st Infantry.

I have read with much pleasure the reports of your regimental commander and brigade commander regarding your gallant conduct and devotion to duty in the field on July 17th, 1918 at Domptin, near Chateau Thierry and have ordered your name and deed to be entered in the record of the

YANKEE DIVISION

(Sgd.) C.R. EDWARDS,
Major General

Commanding 26th Division

Baton Rouge, La.

Mr. John S. Bleecker, manager of the New Orleans Railway and Light Company, was a recent visitor in Baton Rouge.

Mr. G. H. Wygant, manager, has returned from a trip to Savannah, Ga.

Miss Mamie Morrow, of the commercial department, was recently married to Lieut. J. M. Hazen, who has just returned from service in France.

Mr. W. J. Knox, President of the Bank of Baton Rouge, died in November as a result of an injury due to a fall. Mr. Joseph Gebelin has been named as his successor.

Dr. E. O. Powers, state senator, died November 30th, due to injury in an automobile accident.

On November 12th, the Rotary Club was entertained with a luncheon in the boiler room of the power station, with W. C. Joubert, local electrical contractor, and Mr. G. H. Wygant, manager, as hosts. Each guest was given a new white masda as a souvenir.

Beaumont and Port Arthur, Texas

The Charter Commission has completed its work on the new charter for the city of Beaumont and the same will be submitted to a vote of the people on December 30th. The form of government provides for a mayor and council of fifteen citizens elected at large, a commission of three persons, the mayor and two members of the council. The commission appoints a city manager to take active charge of the affairs of the city. The charter also provides for extension of city limits and the forming of a commission for the handling of affairs of the wharves and docks department.

The Beaumont Chamber of Commerce waged a successful campaign during October for the raising of \$50,000 for the expense of maintaining the Chamber during 1920.

Mr. William E. Tucker, of Boston, spent several days in Beaumont during the month.

Mr. L. W. Emery, chief clerk of the accounting department, Beaumont, has been transferred to Paducah, Ky., as assistant treasurer of the properties there managed by Stone & Webster. On the eve of departure, Mr. and Mrs. Emery were presented with a handsome silver platter and vegetable dishes by the heads of departments and employees of the accounting department.

Mr. D. R. Huff, formerly of El Paso, has arrived to take the position of chief clerk of the accounting department, Beaumont.

Mr. S. T. Pike, who has been purchasing agent and assistant to the manager, Beaumont, has gone to Dallas to accept the position of manager of the Guaranty Visible Measure Company.

Mr. and Mrs. A. H. Sweetnam have returned to Boston after spending some time in Beaumont and Port Arthur.

Mr. A. F. Townsend spent two days in Houston during the month.

Mr. and Mrs. L. W. Richards have returned to Beaumont after attending the meeting of assistant treasurers in Boston, and visiting other eastern points.

Mrs. H. J. LeBlanc has resigned her position with the commercial department after having been with the company six years. She was succeeded by Miss Metta Mae Thomas, of Port Arthur.

El Paso, Texas

Mr. D. J. Hennessy, assistant treasurer, has resigned, to enter business for himself. Mr. Hennessy is vice-president and general manager of the Elk Auto Supply Company, but will remain with us until the first of January.

Mr. R. O. Himel, of Galveston, will succeed Mr. Hennessy as assistant treasurer here. Mr. Himel will come to El Paso in December, bringing his family with him.

The excavation for the foundation of the new Federal Reserve Bank branch is under way. This building and site will cost \$150,000. The

building will be on Myrtle Avenue, opposite the City Hall. The new building will be of great beauty and will be replete with the most modern banking devices of every sort.

The work of tearing down the buildings on the site to be built on by the Two Republics Life Insurance Company has gotten well under way, and the first of the year the construction of the modern 8-story reinforced concrete office building will begin. The first floor of this building will be occupied by the City National Bank, which is the consolidated Rio Grande Valley Bank & Trust Company and City National Bank, under the latter name.

Armistice Day and Thanksgiving were holidays.

Mr. D. R. Huff, clerk in the accounting department, has been transferred to Beaumont as chief clerk with the Eastern Texas Electric Company. Mr. Huff has been with the El Paso Company less than a year, having come to us from Columbus, Georgia.

Mr. Brainard Huling, clerk in the accounting department, has resigned, and has left for his home in Hamilton, Georgia. Mr. Huling came to us from Columbus, Georgia, also.

Mr. P. E. Deyo and Mr. J. W. Bratcher are new clerks in the accounting department.

Fort Worth, Texas

It is with regret that we announce the death of Mr. K. M. Watson, who for nine years was claim agent for the local properties. Mr. Watson had been in bad health for several months and the end came in El Paso, where he had been for some time in hopes of recovering. Interment was made in Fort Worth. Mr. Watson's loss is one which will be very keenly felt; his years of experience in claim matters placed him among the foremost of his profession.

Mr. G. H. Clifford spent two days in Houston during the latter part of the month.

Galveston, Texas

Mr. R. O. Himel, assistant treasurer, returned from a pleasant trip to Boston, where he attended the conference of assistant treasurers.

Mr. W. E. Wood, manager, returned to Galveston, after spending several days in the Boston office.

Mr. and Mrs. R. O. Himel have announced the birth, on November 15th, of their fifth son, Daniel.

A "pay as you enter" fare box system was inaugurated on all the closed street cars of Galveston on December 1st.

The voters of Texas, by large majority, authorized the adoption of the amendment enabling Galveston to issue bonds for raising the grade about the city as a further protection against high tides. The adoption of this amendment resulted in the lifting of the embargo on shipping, the reports that twenty-seven vessels were docked in the harbor (the largest number at one time for several years), and that fifty-one other ships were enroute to Galveston. It is beginning to look like old times in the Galveston shipping district.

Five destroyers of the United States Navy Department are in port and will remain here for several days in the interest of a recruiting campaign now being conducted by the Navy Department.

Haverhill, Mass.

The regular meeting of the "Gas Club" was held on Thursday evening, November 20th. Mr. Tom P. Walker gave a very interesting talk, illustrated with photographs, of the First Division from the time it landed in France, through the operations at the front and into the Army of Occupation on the Rhine. Miss Edna Titcomb favored the audience with several readings. An oyster stew supper was served by the committee, after which whist was played. Mrs. Pearl Curley and Andrew Wilcox were awarded the first prizes and Florence Sargent and James Sullivan the booby prizes. Byron Stevens, O. C. Johnson, James Sullivan, William Cook, Goldie Eldredge and Marion Whaland were in charge of this meeting.

The December meeting of the "Gas Club" is to be a Christmas party, designed primarily for youngsters, from six to sixty, and will be held in Unity Hall, December 18th.

Houghton, Mich.

The steamer "Buffalo," which had been ice-bound in Portage Lake, cleared the port and after thirty-six hours of hard work was able to reach Lake Superior via the Ship Canal. She carried over 1,000,000 pounds of copper for Buffalo, N. Y.

The heaviest snowfall in twenty years took place here the last week of November.

The early winter and deep snow has caused the Houghton County Bus Company to lay up their machines for the winter. They will be overhauled during the winter and some will be replaced with new machines.

Mr. H. T. Edgar, division manager, and Mr. David Daly, district manager, were in Houghton during the month on their regular tour of inspection of the Houghton properties.

Mr. S. B. Tuell, manager, and Mr. L. H. Knapp, superintendent of the Southern Division of the Lighting Company, went to Paducah, Kentucky, to attend a semi-annual business meeting of the Stone & Webster managers and superintendents of the Middle West Companies.

The Lighting Company is building a new 11,000-volt line from Dollar Bay to Calumet, including an automatic substation at Lake Linden.

Mr. Ed Cuff, local electrical contractor, has been awarded a contract for wiring fifty more houses owned by the Quincy Mining Company.

The flour mill recently started in Houghton is rapidly nearing completion, and all expect the new industry to commence in the very near future.

Mr. Robert C. Owers, travelling auditor, has arrived in Houghton and is making an audit of the Houghton Companies' books and records.

Mr. Wm. H. Kennedy, assistant treasurer of the Houghton Companies, has returned from an extended trip east.

The anniversary of Armistice Day was celebrated throughout the Copper Country towns on November 11th.

Mr. W. N. Bissell, of Chicago, formerly assistant treasurer of the Houghton Companies, was a Houghton visitor during the latter part of November.

Keokuk, Iowa

Tuesday, November 11th, Armistice Day, was appropriately celebrated in Keokuk. All business houses were closed and the day was given over to parades, receptions and dances, and other forms of celebration.

Mr. David Daly, the new manager of the Middle West District of the Stone & Webster properties, and his family arrived in Keokuk on November 9th.

On November 21st, Akerson-Ringstrom Company, manufacturers of kitchen cabinets, purchased 20 H.P. in motors, replacing the steam plant in their factory.

At the meeting of the High Tension Club on November 19th, Mr. J. L. S. Scadding was re-elected president. The election, and the fun occasioned by the appearance of candidates and "dark horses" with regular Tammany jockeys in the saddle, made the evening "the best ever."

The speech of acceptance for President Scadding, given by J. L. Brady, who produced stage whiskers from some place, was a "scream." The addresses by the rival candidates prior to the election provided more fun, and the affair lived up to the "tip" on the invitation cards of a "live evening."

The other officers elected were as follows: G. W. Carlson, first vice-president; P. I. Robinson, second vice-president; Albion Davis, secretary; B. H. Moore, treasurer.

In addition to the election of officers there was a very interesting program of moving pictures.

The club had for its guests Messrs. H. T. Edgar and David Daly, each giving a very interesting talk.

The six prize turkeys which were won by High Tension Club members at the annual turkey shoot last month, were consumed with great enjoyment by the winners on Thanksgiving Day. The members of the club gave Mr. Scadding a fine young turkey on Thanksgiving Day, as a tribute to the success which the club has enjoyed under his presidency during the past year. Mr. Scadding was unfortunate in losing a prize turkey at the turkey shoot by only one point.

Mississippi River Power Company

Mr. R. V. Sprague has resigned his position as assistant general superintendent to take up other work.

Keokuk Electric Company

We have this month connected to our lines the Harrison Box Company, which replaces a steam plant. This company's contract calls for 100 H.P. contract power, and it is evident that their demand will be at least the 100 H.P. above mentioned.

New London, Conn.

Captain Joseph Loef, before the war a member of the El Paso Electric Railway organization, was the guest of Mr. and Mrs. H. A. Hippler

over Thanksgiving. Captain Loeff is at present an instructor in a field artillery school stationed near Baltimore, and is convalescent from a recent slight operation incident to being gassed while in France.

W. Elliot Witham, recently a lieutenant in the Field Artillery, has joined our organization as cashier.

Ole Hanson, ex-mayor of Seattle, gave a stirring lecture December 3rd, on "Which Flag, the Red, or the Red, White and Blue," at the Crown Theatre, to a packed house. Many members of our organization were fortunate in obtaining good seats.

Paducah, Ky.

A meeting of the Managers of the Middle West District was held on December 4th and 5th, at Paducah. The following members of the Organization were present:—

Mr. H. T. Edgar, Division Manager
 Mr. David Daly, District Manager
 Mr. Hans Von Vittinghoff, Boston Office
 Mr. C. A. Sears, Manager, Mississippi River Power Co.
 Mr. J. P. Ingle, Manager, Keokuk Electric Co.
 Mr. S. B. Tuell, Manager, Houghton Co. Trac. Co.
 Mr. A. S. Nichols, Manager, Paducah Electric Co.
 Mr. P. I. Robinson, Manager, Ft. Madison Co.
 Mr. Iver Carlson, Com'l Agt., Keokuk Electric Co.
 Mr. Knapp, Superintendent, Houghton Co.
 Mr. H. S. Walker, Attorney, Keokuk, Iowa
 Mr. Sawyer, Attorney, Keokuk, Iowa

A dinner was given at the Paducah Country Club to the visiting members of the Stone & Webster organization, and following it a farcical debate between the Hon. C. K. Wheeler, Judge W. A. Berry and W. F. Bradshaw, was staged for the entertainment of the visitors. Mr. Bradshaw posed as a "parlor Bolshevik" with such good effect that amazement was written on the faces of every one present except those who had carefully rehearsed his speech with him. Mr. Sawyer, of Keokuk, was so aroused by Bradshaw's fulminations against capital that he had fully made up his mind to burst into oratory in its defense when a practical joke, which was not scheduled, put an end to the discussion. A very interesting business program was arranged and the meeting was an unqualified success. Lunch was served on both days that the visitors were here, in the office of the manager.

Mr. R. N. Kirkland, assistant treasurer, has been transferred to Lowell, Mass., and is succeeded by Mr. L. W. Emery, formerly assistant treasurer of Beaumont Electric Company, Beaumont, Texas.

Savannah, Ga.

The Home Guards had an outing on Thanksgiving Day at the Rose Dhu Rifle Range, at which Sergeant Carol Figg, of our billing department, won second prize in his company.

The Savannah Fire Department gave a big barbecue and oyster roast at the Country Club on our lines during the early part of November, at which most of the employees were guests.

The Curtis-Johnson Aeroplane Company have arranged to use the beach in front of the Casino at Thunderbolt for a landing point for their seaplanes that are now being operated for pleasure traffic.

Mr. T. N. Hartin has resigned as master mechanic and has been succeeded by Mr. A. P. Brooks, formerly of Pensacola, Fla.

Mr. H. F. Schuler, for several years foreman of our car shops, is to succeed Mr. Brooks in Pensacola.

Mr. G. A. Webb, superintendent of transportation, has just purchased a home on East Anderson Street.

Messrs. W. E. Hawke and T. H. Smith are with us for a general audit of the company's accounts.

On account of the coal strike, our office has eliminated midday dinner and has a "quick lunch" half hour, closing the office at 4 P.M.

A carpenters' strike here now is delaying building activities to quite an extent, and has been followed by a strike of the electrical wiremen.

The *Electrical Review* of November 22nd, in a long article gives a description of a 200 H.P. electrically driven pump now operating the big artesian well in Dasher Park for the Savannah Waterworks. A duplicate equipment is now being installed in Reynolds Square, and a third well is now being driven in Forsyth Park to be similarly equipped. These wells are over 500 feet deep and graduate from 24 inches to 16 inches in diameter.

Seattle, Wash.

The Associated Industries of Seattle, which came into existence as a defensive organization during the so-called general strike of last February, has perfected a constructive program for the common protection of employees, employers and the public. Associated Industries recognized the revolutionary agencies when the general strike was called, and immediately upon organization set out to counteract them. The amalgamation of all of the industries and of business generally into a defensive front started from a small nucleus. It was begun when business and industry first read the threat of bolshevism to take over industry and operate it by the workers, as the red radicals expressed it. Associated Industries grew to 700 members, and then determined to start an aggressive membership campaign, which is now in progress.

One of the important features of its constructive program is the creation of a committee on wage scales and working conditions. This is the most important committee in the organization, and has work planned that will give its members plenty to do.

It is headed by Mr. A. W. Leonard, president of the Puget Sound Traction, Light & Power Company. Mr. Leonard says the committee is gathering data on wages from all Pacific Coast cities back as far as the pre-war year of 1914. Data on the cost of living also will be collected, and comparative analyses will then show the comparative advances. Fully as important, however, will be the information collected and classified bearing on hours and general working and living conditions. It is the purpose of the committee to go into all this thoroughly, as it will form the basis for all future labor negotiations by the organization.

Associated Industries frankly opposes the closed shop and favors

the open shop as a fair, free American institution. It is pledged to support this as its fundamental reason for existence.

The Seattle Section, American Institute of Electrical Engineers, met on the 17th of November, in the assembly room of the Chamber of Commerce, with a packed attendance; the feature of the meeting being the address of Col. F. B. Jewett, chief engineer of the Western Electric Co., who told the interested gathering of the development of the wireless telephone and its perfecting during the war. A great deal of the address bore upon the uses of wireless telephony in the direction of aeroplanes; of its use in the field and in connection with a submarine detector, water being used as a medium for conveying sound instead of air as in ordinary practice. Col. Jewett illustrated his talk with moving pictures and slides showing the uses of the wireless telephone under exacting conditions, and characterized its performance as in every way satisfactory.

Mr. G. E. Quinan, engineer of this company, left Seattle on the night of November 25th for Portland, to attend a meeting of the Governing Committee of the Hydro-Electric and Technical Section of the Northwest Electric Light & Power Association, of which he is chairman, and returned to Seattle for Thanksgiving. On the night of November 27th, Mr. Quinan left again, this time for Denver, where he was scheduled for a joint meeting of the Overhead Systems Committee and the Inductive Interference Committee of the National Electric Light Association. From Denver, Mr. Quinan proceeded to Omaha in connection with the same work.

Regulations which affect electric illumination in many parts of the United States, where generation depends upon coal, do not affect the Puget Sound District, where nearly all generation during the winter months is by water power, and the newspapers are out with articles to that effect, quoting officials of this company who explain the advantages of living under such benign conditions. The statement applies particularly to the Puget Sound Traction, Light & Power Company, as the Municipal Plant of Seattle is partly steam generation; fuel oil, however, being used in its Lake Union plant to keep up to the requirements of its service.

A number of officials and employees of the Seattle Division of the Puget Sound Traction, Light & Power Company went over to Tacoma a week ago to attend the Tacoma Company reception to Mr. R. T. Sullivan, the new manager of the Tacoma Company, given at the Commercial Club.

Mr. F. S. Pratt, chairman of the Board of the Puget Sound Traction, Light & Power Company, is in Seattle, having arrived from Boston on the night of December 4th.

LIBRARY NOTES

The *National Research Council* has issued its "Third Annual Report." This shows a wide variety of investigations with which it has been identified. The Council was organized in 1916 for the purpose of stimulating research in various sciences, surveying the possibilities for promoting co-operation in research, at home and abroad, and bringing investigators together; directing attention to problems of military and industrial importance in connection with the war; and gathering and collating scientific and technical information.

The *Engineering News-Record* has published a pamphlet entitled, "*Technical Societies and National Engineering Trade Associations of the United States and Canada.*" It is a very handy check list, and particularly useful as giving the names and addresses of secretaries, together with the month in which the annual meetings are held.

The *Government* issues many periodicals and also a leaflet describing them. Some of these are highly specialized, like the "Alaska Railroad Record," "Coal Mine Fatalities," and "Diplomatic List," whereas others are as general as "Catalogue of Copyright Entries," "Journal of Agricultural Research," "Monthly Catalogue of United States Public Documents," and "School Life."

The "*Index to Engineering News*," for the years 1910-1917, is the latest of a series which began with 1890-1899. The introduction well recommends the following:

"The reader who intends to make considerable use of this or any index is urged to study it for a short time page by page until he has grasped the indexer's scheme of classification, arrangement, etc., as it is quite impossible to describe in detail such individual characteristics as are necessarily found in every index."

The title of "*The United States Catalogue*" hardly suggests the contents, though the sub-title, "The Cumulative Book Index," is more to the point. We recently received the issue that covers the period from January, 1918 to June, 1919. This book might to advantage be consulted by those who have received publishers' lists, but who have failed to look them over. See, for instance, what has been published under the subject of "Fuel," and note the cross references thereon; see also "Gas and Oil Engines," "Geography," "Finance," etc.

For every Congress of the United States there is published a "*Document Catalogue*." No. 12, for the 63d Congress, 1913-1915, is issued in 1919, thus lagging some four years behind, as is customary. It is a good check list of what the Government has put forth in those years, and one who is going thoroughly into almost any subject will do well to bear this publication in mind. Under "Coal," for instance, there will be found entries covering six pages; under "Forest Service," four pages; "Panama Canal," ten pages, etc.

LIBRARY OF STONE & WEBSTER

Recent Accessions

(10) Civil Engineering

- 663 Notes on the construction of the Mystic River Bridge, Everett extension of the Boston Elevated Railway Co. C. T. Fernald. [Reprinted from the Journal of the Boston Society of Civil Engineers, Vol. 5, No. 8, Oct., 1918.] 12p, 6x9, illus, diags. *0734.F392
- 664 Seventh report of the Quebec Streams Commission, 1918. Quebec, 1918. 120p, 7x10, maps. *7260.St83.1918
- 665 Protective metallic coatings for the rustproofing of iron and steel. U. S. Bureau of Standards. Circular No. 80. Issued Oct. 4, 1919 Wash., 1919. 33p, 7x10, illus. *6898.C80

(20) Electrical, (30) Mechanical Engineering

- 666 The story of electricity: Vol. I—a popular and practical historical account of the establishment and wonderful development of the electrical industry; with engravings and sketches of the pioneers and prominent men, past and present. Edited by T. C. Martin and S. L. Coles. New York, 1919. 661p, 8½x11, illus. *071.M3656.Vol. 1
- 667 Proceedings of the Institution of Mechanical Engineers, Jan.-May, 1919. London, 1919. 579p, 5½x8½, illus. *6952.1919a
- 668 Reheating process for the removal of sulphur compounds. The Reheating Process, Portland, Oregon. nd. 8p, 6x9, diag. V*078.R2678
- 669 Tests of flexible gas tubing . . . Technologic Paper No. 133. U. S. Bureau of Standards. Issued Oct. 27, 1919. Wash., 1919. 37p, 7x10, illus. *6898.Tp133

(40) Mining

- 670 Peat in 1918. C. C. Osbon . . . U. S. Geological Survey. Wash., 1919. (25p) 6x9, map. *6874.075pe.1918
- 671 Peat in the Dismal Swamp, Va. and North Carolina. C. C. Osbon . . . U. S. Geological Survey. Bulletin 711-C. Wash., 1919. (18p), 6x9, illus, map. *6874.B711-C

(50) Railways

- 672 Electric railways: recommendations made by investigating committee and commission . . . prepared by committee on recommendations of the Committee of One Hundred, American Electric Railway Association. Oct. 1, 1919. Wash., 1919. 77p, 6x9. *6940.0221
- 673 Report of the committee on one-man car operation. C. W. Kellogg and others . . . American Electric Railway Transportation and Traffic Association . . . Oct. 6-10, 1919. 15p, 6x9. *6942.K2913.07127
- 674 The work at headquarters: report of E. B. Burritt, Secretary, presented at the thirty-eighth annual convention of American Electric Railway Association, held at Atlantic City, N. J., Oct. 6-10, 1919. 39p, 6x9. *6940.05
- 675 Report of the Engineers Valuation Board in regard Pittsburgh Railways Co., submitted to the Public Service Commission of the Commonwealth of Penn., Aug. 1919. 88p, 8½x11, maps. *1812.En33.0521

- 676 The railroad problem: a discussion of current railway issues. The Annals of the American Academy of Political and Social Science. Nov., 1919. No. 175. 252p, 7x10. *022.Am35r
- 677 New railways in foreign countries. Guaranty Trust Co. of New York. Oct. 28, 1919. unpag., 8½x11. *022.G931
- 678 Leakage resistance of street railway roadbeds and its relation to electrolysis of underground structures. U. S. Bureau of Standards. Technologic Paper No. 127. Issued Oct. 6, 1919. Wash., 1919. 39p, 7x10, illus. *6898.Tp127

(73) Industrial Relations

- 679 National Industrial Conference of the Dominion and Provincial Governments of Canada, with representative employers and labour men, on the subjects of Industrial Relations and Labour Laws, and for the consideration of the labour features of the Treaty of Peace. Official report of proceedings and discussions . . . Ottawa, Sept. 15-20, 1919. Ottawa, 1919. 234p+, 7x10. *7200.N2133.1919
- 680 International labor legislation and the society of nations. Bulletin of the U. S. Bureau of Labor Statistics. No. 254. May, 1919. Wash., 1919. 135p+, 6x9. *6899.B254
- 681 "How do you do it?" (Industrial Relationship) Sherman Service, Inc. New York [c1919]. 10p, 7x10, chart. *0291.Sh55
- 682 Am I my brother's keeper? (Supplement to Manufacturers Record, 11/13/19.) R. H. Edmonds, 1p, 15x22. *099.Ed585

(74) Financial

- 683 Appraisals and rate making. C. F. Elmes. [Read before 15th annual convention of Illinois Gas Association, March 20, 1919, Chicago, Ill.] 25p, 8x11, charts. *025.El635
- 684 Report of Committee on the sale of company securities to customers and resident citizens. [Read before the National Electric Light Association at its 42d convention, Atlantic City, N. J., May 19-22, 1919.] New York, nd. 47p, 6x9. *6921.1919.74s

(76) Legal

- 685 An Act . . . for termination of Federal control of railroads and systems of transportation . . . House Resolve 10453—Senate of United States. Nov. 17, 1919. Wash., 1919. 84p, 7½x11. *6800.031c2
- 686 Pending congressional legislation as affecting owners of railroad securities. S. D. Warfield. [Address before the 39th annual meeting of The Academy of Political Science, New York City, Nov. 21, 1919.] 11p, 6x9. *0315.W231
- 687 Massachusetts income tax service: including law, interpretations, appeals and court rulings, 1917. Supplementary to State Government Information Bulletins issued by Bureau of Department Reports operated by the Boston Herald. Boston [C1917]. vp, 7x10. *0318.C817ma
- 688 The Constitution of the U. S. of America reprinted from the official text as published by the Department of State at Washington, D. C., 1916, with the addition of the eighteenth amendment as published in the proclamation of the acting Secretary of State, Jan. 29, 1917. National Industrial Conference Board, Sept., 1919. 21p, 3½x6½. *6800.C765na

(80) Statistics

- 689 Census of industry, 1917: Part I—Statistics. Central electric stations in Canada . . . Dominion Bureau of Statistics. Ottawa, 1919. 27p+, 6½x10. *7200.023.Pt.1.1917
- 690 The Municipal Register for 1919 . . . compiled and edited by the Boston Statistics Department. City Document No. 37. Boston, 1919. 318p, 6x9. *1461.M92.1919

- 691 Population and its distribution. Compiled from the U. S. Bureau of Census figures. 2d ed. Revised and enlarged, Oct., 1918. J. W. Thompson Co., New York [c1918]. 218p, 6x9. *026.T3747
- 692 Statistics of Dominion of New Zealand for the year 1918. Vol. II. Trade and shipping. Wellington, 1919. 399p, 8½x11. *7380.02. Vol. 2.1918
- 693 Financial statistics of cities having a population of over 30,000. 1919. U. S. Bureau of Census. Wash., 1919. 357p, 9½x11½. *6891.025.1918
- 694 Business conditions in Argentina. Report No. 145. July 31, 1919. Ernesto Tornquist & Cia., Ltd. Buenos Aires, 1919. 27p, 8x10. *8250.02b
- 695 Curves showing the plots of the trend of prices of various commodities and index numbers. Morris Knowles, Inc. Pittsburgh, 1918. charts, 8½x11. *1812.En33.0521c

(90) Sources of Information

- 696 Supplement to U. S. Coast and Geodetic Survey catalogue of charts, coast pilots and tide tables, 1918. Serial No. 117. [Aug. 15, 1919.] Wash., 1919. 6p, 8x10. *6897.096s.1918
- 697 The (Old) Farmer's Almanack: calculated on a new and improved plan for the year of 1920. R. B. Thomas. Boston [c1919]. 64p, 5x7½. a*09.T36.1920
- 698 Bulletin of the Public Affairs Information Service: a co-operative clearing house of public affairs information — fifth annual cumulation . . . 1919. The H. Wilson Co. New York, 1919. 512p, 7x10. *096.W693pa.1919
- 699 Public works of the Navy under the cognizance of the Bureau of Yards and Docks and the Corps of Civil Engineers, U. S. Navy. Jan., 1918 (quarterly). Bulletin No. 29. Wash., 1918. 56p, 6x9, illus. *6863.B29
- 700 The Costa Rica volcanoes and the earthquakes of April 13 and May 4, 1910. T. A. Jaggar, Jr. Also earthquake effects on structure at Cartago, Costa Rica. C. M. Spofford. [Reprinted from Journal of the Association of Engineering Societies, Feb., 1911.] 80p, 6x9. *077.J184
- 701 Federal executive departments as sources of information for libraries. Compiled by Edith Guerrier. Sept. 1, 1919. U. S. Bureau of Education. Bulletin No. 74. Wash., 1919. 204p, 6x9. *6873.B74

Miscellaneous

- 702 Forest products: their manufacture and use . . . 1st ed. M. C. Brown. New York, 1919. 471p, 6x9½, illus. *0774.B8145
- 703 City Document No. 27. Inaugural address of Hon. J. H. Kay, Mayor of the city of Fall River . . . 1918. Fall River, 1919. vp, 6x9. *1483.058.1918

COUPONS AND DIVIDENDS DUE

		Per Cent.
Dec.	1, Baton Rouge Electric Company, Preferred Stock, 6 per cent.	3
Dec.	1, Baton Rouge Electric Company, Common Stock, 8 per cent.	4
Dec.	1, Berkshire Power Company, The, 5s, 1934	2½
Dec.	1, Blackstone Valley Gas and Electric Company, Preferred Stock, 6 per cent.	3
Dec.	1, *Blackstone Valley Gas and Electric Company, Common Stock	2
Dec.	1, Bridgewater Electric Company, The, 5s, 1920	2½
Dec.	1, *Connecticut Power Company, The, Preferred Stock, 6 per cent.	1½
Dec.	1, Edison Electric Illuminating Company of Brockton 5s, 1930.	2½
Dec.	1, Edison Electric Illuminating Company of Brockton 6s (Coupon Notes), 1919, Principal also due.	3
Dec.	1, *Key West Electric Company, The, Preferred Stock, 6 per cent.	1½
Dec.	1, *Northern Texas Electric Company, Common Stock.	2
Dec.	1, Pawtucket Gas Company of New Jersey, The, Preferred Stock, 5 per cent.	2½
Dec.	1, Puget Sound Power Company 5s, 1933.	2½
Dec.	1, Puget Sound Traction, Light & Power Company 7s (Coupon Notes)	3½
Dec.	1, Tampa Electric Company 5s, 1933.	2½
Dec.	15, *El Paso Electric Company, Common Stock..	2½
Jan.	1, Baton Rouge Electric Company, 6s (Coupon Notes), 1920 (Principal also due)	3
Jan.	1, Blackstone Valley Gas and Electric Company 5s, 1939.	2½
Jan.	1, Cape Breton Electric Company, Ltd., 5s, 1932	2½
Jan.	1, Columbus Electric Company 6s (Coupon Notes), 1919.	3
Jan.	1, Columbus Electric Company, Preferred Stock, 6 per cent.	3
Jan.	1, Connecticut Power Company, The, 5s, 1956..	2½
Jan.	1, Connecticut Power Company, The, 6s (Coupon Notes), 1920 (Principal also due)	3

*Payable quarterly.

			Per Cent.
Jan. 1,	Eastern Texas Electric Company, Preferred Stock, 6 per cent.	3	
Jan. 1,	Eastern Texas Electric Company, Common Stock, 5 per cent.	2½	
Jan. 1,	Electric Light & Power Company of Abington and Rockland, The, 7s (Coupon Notes), 1923	3½	
Jan. 1,	Electric Light & Power Company of Abington and Rockland, The, Capital Stock, 8 per cent	4	
Jan. 1,	El Paso Electric Company 5s, 1932.	2½	
Jan. 1,	*Haverhill Gas Light Company, Capital Stock, 9 per cent.	2¼	
Jan. 1,	Houghton County Electric Light Company 5s, 1927.	2½	
Jan. 1,	Houghton County Street Railway Company, The, 5s, 1920.	2½	
Jan. 1,	Houghton County Traction Company 5s, 1937	2½	
Jan. 1,	Keokuk Electric Railway & Power Company 5s, 1925.	2½	
Jan. 1,	Mississippi River Power Company 5s, 1951 ..	2½	
Jan. 1,	New London Gas and Electric Company, The, 5s, 1933.	2½	
Jan. 1,	Northern Texas Electric Company 5s, 1940. . .	2½	
Jan. 1,	Northern Texas Traction Company 5s, 1933.	2½	
Jan. 1,	Paducah Electric Company 5s, Series A, 1924.	2½	
Jan. 1,	Paducah Electric Company 6s, Series B, 1924.	3	
Jan. 1,	Pawtucket Electric Company 5s, 1938.	2½	
Jan. 1,	Pensacola Electric Company 7s (Coupon Notes), 1921.	3	
Jan. 1,	Reno Power, Light and Water Company 6s, 1944.	3	
Jan. 1,	Savannah Electric Company 5s, 1952.	2½	
Jan. 1,	*Savannah, Thunderbolt and Isle of Hope Railway, The, 4s, 1947.	1	
Jan. 1,	Sydney and Glace Bay Railway Company, Ltd., 5s, 1932.	2½	
Jan. 1,	Woonsocket Electric Machine and Power Company 4½s, 1931.	2¼	
Jan. 12,	El Paso Electric Company, Preferred Stock, 6 per cent.	3	
Jan. 15,	Keokuk Electric Company 6s, 1923.	3	

*Payable quarterly.

Dividend rates are based on last declaration.

Quotations on Securities

OF

Companies under Stone & Webster Management

DECEMBER 1, 1919

The Securities Department executes orders on commission for those wishing to purchase or sell.
Requests for information in regard to the companies will be answered promptly.

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Ab. & Rock., The El. Lt. & Pr. Co. of { Notes, July, 1923	7%	99½	No	Pref	8%	120
Baton Rouge Elec. Co. { Bonds, 1939 Notes, Jan., 1920	5% 6%	85 100	6%	78		.....
Blackstone Valley Gas & Elec. Co. (Common Stock par value \$50)	5%	92½	*6%	95	8%	61
Cape Breton Elec. Co., Ltd.	5%	80	6%	70	3%	25
Central Mississippi Valley Electric Properties	No	Bonds	*6%	40		5 N
Chicago, Wilmington & Franklin Coal Co.			*6%	90		100
Columbus Elec. Co. { Bonds, 1933 Notes, July, 1922	5% 6%	85 97½	6%	75		23
Columbus Power Co., The	5%	90		.....		.....
Connecticut Power Co., The { Bonds, 1963 Notes, Dec., 1921	5% 6%	90 98	*6%	83		
Connecticut Valley Lumber Co. { Serial Bonds June, '22-'34	6%	97½				
Eastern Texas Elec. Co. { Bonds, 1942 Notes, Aug., 1921	5% 7%	85 100	*6%	81	5%	55
Edison Elec. Ilig. Co. of Brockton { Bonds, 1930 Notes, March, 1921	5% 5%	100 100	No	Pref	8%	120
El Paso Elec. Co. { Bonds, 1932 Notes, 1920	5% 6%	91 99½	6%	83	10%	80
Fall River Gas Works Co.	No	Bonds	No	Pref	12%	170
Galveston Elec. Co.	5%	80		.....		.....
Galveston-Houston Elec. Co. { Notes, March, 1922	7%	99½	*6%	60 ^B / _L		15 ^B / _L
Galveston-Houston Elec. Ry. Co.	5%	82	No	Pref		.....
Haverhill Gas Light Co. (Stock par value \$50)	No	Bonds	No	Pref	9%	55
Houghton County Elec. Lt. Co. (Stock par value \$25)	5%	92½	6%	18	5%	12
Houghton County St. Ry. Co., The	5%	99	No	Pref	No	Com

COMPANY	BONDS		PREF. STOCK		COMMON STOCK	
	Int. Rate	Price and Int.	Div. Rate	Price	Div. Rate	Price
Houghton County Traction Co.	5%	80	*6%	35		5
Houston Elec. Co.	5%	96 ^B / _L		.....		.....
Jacksonville Elec. Co.	5%		No	Pref	No	Com
Jacksonville Traction Co.	5%					
Keokuk Electric Co.	6%	100	*6%	85		.....
Key West Elec. Co., The	5%	80		.....		.....
Lowell Elec. Lt. Corp., The	No	Bonds	No	Pref	10%	150
Mississippi River Power Co.	5%	79 ^A / _B		52 ^A / _B		11 ^A / _B
Northern Texas Elec. Co.	5%	80	6%	74 ^B / _L	8%	70 ^B / _L
Northern Texas Traction Co.	5%	90	No	Pref		.....
Pacific Coast Power Co.	5%	90	No	Pref	No	Com
Pensacola Elec. Co.	{ Bonds, 1931 Notes, Jan., 1921	5%	80	35		5
		7%	99			
Ponce Elec. Co.	6%	95	No	Pref		.....
Public Service Investment Co.	No	Bonds	*6%	67		20
Puget Sound Elec. Ry.	5%	82 ^B		.....		.....
Puget Sound Power Co.	5%	92	No	Pref	No	Com
Puget Sound Trac., Lt. & Pr. Co.	{ Notes, 1921	7%	100	*6%	54	12
Railway & Light Sec. Co.	{ First Series, 1935	5%	95	*6%	83	6%
	{ Second Series, 1939	5%	92½			
	{ Third Series, 1939	5%	92½			
	{ Fourth Series, 1942	5%	91½			
	{ Fifth Series, 1944	5%	91½			
	{ Sixth Series, 1946	5%	91			
Savannah Elec. Co.	5%	55 ^B / _L				
Seattle Elec. Co., The	{ 1st Mortgage, 1930	5%	95 ^B	No	Pref	No
	{ Cons. & Ref., 1929	5%	88 ^L			
	{ Seattle-Everett, 1939	5%	83			
	{ The Seattle Ry., 1921	5%	97			
Sierra Pacific Elec. Co.	{ Notes, Feb., 1922	7%	98½	*6%	50	4
Tacoma Ry. and Pr. Co.	5%	80	No	Pref		.....
Tampa Elec. Co.	5%	93	No	Pref	10%	110
Whatcom County Ry. & Lt. Co.	5%	83	No	Pref	No	Com

Quotations are approximate. All stocks \$100 par value unless otherwise specified.

*Cumulative. †Ex-Dividend. A. Listed on London Stock Exchange. B. Listed on Boston Stock Exchange. L. Listed on Louisville, Ky. Stock Exchange. N. Common shares have no par value. X. Ex-rights.

**The Securities Department wishes to
bring to the attention of members
of the organization the following:**

**We do a general investment banking business and specialize
in the securities of companies under the management of our
organization and in the securities of companies which we
have investigated.**

**The resources of a large organization are at all times
available to investors who desire information concerning
investments or service in connection with the purchase and
sale of securities.**

STONE & WEBSTER

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avail themselves of this investment service, but also to help
in broadening its usefulness by calling it to the attention
of others.**

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